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THE proposed revision of the Building Law of New York has, we regret to say, failed to pass in the Legislature, and the reforms which would have been brought about by means of it must wait another year if, indeed, they will ever be accomplished. The present bill was substantially the same as that drawn up by Mr. Esterbrook some time ago, and possessed all the merits which would naturally be looked for in a scheme prepared by an intelligent and experienced man for correcting the weak points of a law which he had for years administered. It will be long, we imagine, before so favorable an opportunity will occur again, and those who wish well to the cause of good building should endeavor to keep in mind all the good points of Mr. Esterbrook's proposed regulations, as a guide for future legislation.

THE Electric Lines Company of New York, which has secured the privilege of constructing underground conductors, to be rented to telegraph or telephone companies, proposes to begin work immediately, and will lay its cables very rapidly through the principal streets of the city. The conduit to be used, instead of an iron pipe, is said to be a wooden box, nineteen inches wide and seven inches high, divided into three compartments, each compartment containing a cable of sixty-eight wires. In order to prevent induction the wires are kept apart by templets of gutta-percha, and after the templets are full they are revolved, so as to bring the wires into spiral lines. When this is done, the cable is placed in a mould and melted paraffine poured over it, which hardens into a sort of candle with sixty-eight wire wicks. This is a comparatively inexpensive process, and the company expects to reduce the cost of its lines below that of the overhead wires. The boxes are, it is said, to be laid two feet below the surface of the streets; but it is difficult to see how objects so fragile can be safely maintained in that position.

A CASE involving the right of telephone companies to the use of other persons' buildings as supports for their wires was decided in Hartford not long ago. It seems that the local telephone company, in running its lines, carried them over the roof of a block of stores on one of the principal streets. The owner was informed that it would only be necessary to use the building in this way temporarily, and that in about four days the wires would be removed to poles in the streets, and not wishing to incommode the company, he consented to this arrangement, saying that he would allow a week, instead of the four days asked for. At the end of the week, the representatives of the company came to him and asked for an extension of the time, which was granted, as were successive requests of the same kind, until the wires had been in place a month. By this time the owner, who had seen the period for which his courtesy was invoked increased to seven times its original limit, had lost patience, and he declined to extend it further. This apparently made no difference to the company, which simply left its wires where they were, and the owner then requested their removal. No reply was made to the request, and after some time a formal notice was served upon the company, that the wires must be taken from the building within a reasonable time, or they would be summarily removed by the owner himself. Even this brought no response, and after waiting several days the owner proceeded to the roof of his building armed with an axe, and knocked the company's property into the street. The company then brought an action against the owner for malicious mischief, and was promptly defeated, the jury bringing in a verdict for the defendant, with costs, in twenty minutes.

SEVERAL cases of undoubted typhus fever have occurred recently, both in Boston and New York, where the disease seems to have been traced directly to its source in the vapors generated by decomposing filth. Six cases of the fever occurred in one building, a crowded tenement-house in West Seventeenth Street, and it is remarkable that none of the patients were over eighteen years old, most of them being under five. This may, perhaps, show that the infection originated in the building, since children too young to go about would be less exposed to contagion from without, as well as more sensitive to the unfavorable influences immediately around them, and the investigation of the structure which was made by the attending physicians showed that the air of the cellar was in a most poisonous condition, the floor being covered with heaps of filth standing in pools of water. A thorough cleansing and disinfection of the cellar was immediately followed by a change in the condition of the patients in the rooms above, and while two, attacked early, died before the improvements were made, all who lived until they were completed began to show signs of recovery.

THE people of Boston have been entertained with another artistic competition, the subject this time being the great Unitarian minister, Theodore Parker, whom it is intended to commemorate by a bronze statue. We do not know the details of the competition, but imagine that it must have been somewhat similar to that for the Revere statue. However that may be, ten models have been submitted, by artists of about the same class as those who struggled for the little prizes on the other occasion. According to the Boston *Herald*, "there is considerable variety in the models," which is satisfactory, although there may be some question whether this might not have been better gained in some other way than by representing the divine in some cases as a terminal figure and in others as a fully clad human being, or by furnishing him with features ranging from those of Horace Greeley to the wrinkled countenance of a melancholy old man. As usual, now that the committee has secured the designs of those who were willing to make them on speculation, it turns from them with something like contempt, "to continue its correspondence with certain sculptors who have not as yet submitted models;" and we will again venture the prediction that if the statue is executed at all, it will be by one of those "certain sculptors" who has self-respect enough to refuse to "submit models" or do any other professional work without the assurance that he is to be paid for it.

IN the matter of the Revere statue, the committee which disposes of the questions of fine art is in a pitiable plight. After calling airily upon the little men, and respectfully upon the great ones, to lend their aid in furnishing a cheap design for an equestrian statue, it has suddenly been discovered that the idea of representing Paul Revere on horseback, if not reprehensible, is at least the product of an "unthinking sentiment," and that since Revere was "neither a professional soldier nor a courier," "historical exactness" requires that his statue should not exhibit him as mounted, or even, like one of the models submitted, as leaping about on the ground around a horse, but that "without any sacrifice of the poetic element to which the sculptor's art is so intimately wedded," he should be shown simply "in the character of a patriotic tradesman." Fortunately, the error of the committee, though grave, was not irreparable, and we are told that "it is gratifying to learn that

the idea of making the statue an equestrian one has been practically abandoned." What will be the result of this singular change in the scheme it is impossible to say. In one respect the new theory ought to lighten materially the Committee's labors, for statues of patriotic tradesmen, only requiring the features to be trimmed to suit customers, are kept in stock by most foundries, but, so far as we have observed, the "poetic element" is not so "intimately wedded" to these productions as might be desirable, and the task of extracting any sentiment or interest from a programme so utterly bald would appal Michael Angelo himself.

THE Hygienic Exhibition at Berlin, after a year's postponement, has just been opened to the public. The catastrophe which destroyed the buildings of last year has been guarded against this season by making all the structures on the ground of iron, and, according to the *Builder*, a plan was adopted which would seem worthy of imitation in other cases. In brief, the building consists of a cluster of cells, all alike, each being sixty-two feet square. Twenty-five of these are ranged side by side in five rows of five cells each, while extra cells of the same size, added at the ends of the main group, serve as promenades and refreshment rooms. We suppose from the description that each cell has its own roof, and constitutes a separate structure, supported on light columns, the merit of the system consisting in the ease and economy with which a series of light and simple buildings of this kind can be so grouped as to form an exhibition hall of any size, and, after their service is over, transported to some other place, and set up in a new form. The exhibits seem to be about the same as those intended to be shown last year, among them being a cremation furnace, a miniature theatre, a school of cooking, and a model dwelling-house.

LE GENIE CIVIL gives an interesting account of the construction of the new observatory on the summit of the Pic du Midi, a high, nearly isolated mountain, connected with the Pyrenees range, at an elevation of about ninety-five hundred feet above the sea. The position of the mountain, although exposing it to very violent tempests, is peculiarly favorable for meteorological studies, and the General de Nansouty, a devoted man of science, built at his own expense the structures which have now been offered to the government, and accepted in behalf of the public. As the wind-pressure on the summit, by actual measurement, sometimes reaches fifty pounds to the square foot, it was necessary that the buildings should be solid, and the variations of temperature extending from an observed maximum of one hundred and fifty-nine degrees above zero to sixty-three degrees below, it was desirable that they should also be made of a non-conducting character, while, as all materials except stone had to be brought by a painful journey from the pass below, it was important to make the best possible use of those on the ground. The crest of the mountain is so steep that its summit did not present any space large enough even for the small observatory building, and it was necessary to blast the peak with dynamite until a little valley had been excavated to contain the structure. In order to protect the habitable part of the observatory from the terrible cold, its walls were built double, the inner wall, of stone, eighteen inches thick, being surrounded by an envelope, consisting of a stone wall, two stories high, four feet thick in the first story, and three feet in the second. A space four feet wide was left between the inner and outer walls all around, covered with a stone vault. This space had windows on the south side, and served as a promenade, and corresponding windows in the inner wall admitted the light to the interior. On the north side, where the snow in winter often drifted higher than the top of the roof, small loop-holes only were left in the walls. The inner portion of the building was also covered with a stone vault, the extrados of which was brought to the profile of an ordinary roof, and covered on one side with slate, and on the other side with vitrified tiles. A season's experience, however, showed that the tiles were incapable of resisting the extreme variations of temperature, and that it would soon be necessary to replace them with slate. No timber was used in the roof, the slate and tiles being simply bedded in cement. The rain-water from the roof was collected in two cisterns, built of stone and vaulted. As the season during which building operations on the summit were practicable lasted only about six weeks, the construction, begun in 1874, was not completed until the summer of 1881.

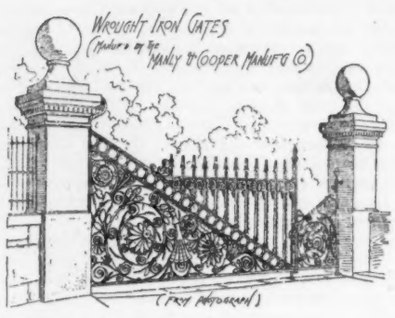
A GREAT scientific prize is to be awarded in the year 1887, under the name of the Volta Prize, to the person who shall before June 30 in that year make the most important discovery in electricity, as applied to the production of heat, light, chemical action or mechanical power, or as an agent for the transmission of messages or the cure of diseases. Those who think themselves deserving of this prize must present their claims before the French Academy of Sciences, but no limitation of nationality will be regarded in the award. The final judgment, in order to give time for full discussion of the merits of the various applicants, will not be pronounced until December of the same year. The prize is to be in money, and amounts to fifty thousand francs, so that it will be well worth competing for.

AMONG the many prizes open to students and practitioners of architecture in France is one which, according to the terms of the deed by which it was founded, is to be given for the encouragement of young architects who may have given proof of filial or fraternal piety. The prize is of the very substantial value of fifteen hundred francs, and has this year been awarded to M. Dollé. What may have been the particular act of devotion which won for him this recompense we do not know, but we take pleasure, as well in recording his merit and its reward, as in calling attention to the appreciation which personal as well as professional excellence meets with in France.

A SHIP-of-war has recently been built in Denmark which presents some novel features. The general form of the vessel resembles that of the well-known "Monitor," consisting of a hull nearly submerged, sustaining a turret protected by heavy armor. In order to give the hull as much displacement, and consequent sustaining power, as possible, and to diminish at the same time the weight of iron necessary to protect it, the bulwarks are not merely made low, but are actually submerged, the section deck forming an arch, of which only the crown appears above water. This deck is covered with iron and steel plates varying from one and two-thirds to three inches in thickness. The angle made by the deck-plates with the horizon is so small that projectiles aimed at them are expected to glance off, the turret being the only portion exposed to a direct blow, and their thickness is therefore correspondingly reduced. As a ship with an arched deck, most of which is under water, would present a rather awkward field for the manœuvres of the crew, a sort of false deck of wood is built above the iron, and boarded over, so as to form a surface nearly level. In action, these false works would soon be shot away, but to preserve them as long as possible they are made in separate sections, well secured to the iron, and the space between them and the real deck is filled with cork, which helps to arrest the shot aimed at the deck.

IN order to test the efficiency of the system, a temporary frame was constructed recently on an island near Copenhagen, and covered with plates corresponding in position and thickness with those of the new ship. The frame was then attacked with shot from two cannon, one of which was a Krupp breech-loader of six inches bore, while the other was a nine-inch Armstrong muzzle-loader. From the Krupp gun were fired first hollow, conical projectiles, of tempered steel, and afterwards shot of a new pattern, introduced by Herr Krupp expressly for penetrating armored decks, and consisting of a straight, cylindrical mass, having the front slightly hollowed, so as to present a sharp circular edge. The Armstrong gun was furnished with cast-iron projectiles of the Palliser pattern, and also with ordinary shells, with percussion fuse. With a range of five hundred yards all the projectiles made some impression on the plates, but the most decided effect was produced, very naturally, by the nine-inch Palliser shot, weighing two hundred and fifty pounds each, which broke their way, merely by the shock of their tremendous impact, through some of the plates, although they glanced off from the others. The edged projectile of Krupp, although weighing less than half as much as the other, proved nearly as effective, catching in the plates and ploughing its way deep into the iron. The bulwarks of cork, which were tested at the same time, appear to have done little or nothing to resist the shot, but in return, the cannon balls, and even the shells, passed through or burst in the soft substance without dispersing it, or even setting it on fire.

MODERN PERSPECTIVE.[1]



THIS work essentially consists of a series of illustrated "Papers on Perspective," commenced in No. 106 of the *American Architect*, Vol. III, continued in Vols. III and IV, and completed, after an interval of several years, in Vols. XII and XIII. These papers have been carefully revised, considerable additions made to them, especially a Summary and a chapter entitled "Geometrical Problems," containing a concise statement of the notation and methods employed, with brief solutions of the more difficult problems which would occur to draughtsmen, arranged for easy reference.

The book is published in two volumes, one containing the text, the other comprising the twenty-seven illustrative plates contained in a neat portfolio.

The science or art of Perspective is usually treated in one of two general ways.

1. As an applied form of Descriptive Geometry, when the practical side of the subject is subordinated to its scientific treatment, and the author pays most attention to "beautiful methods and applications;" *i. e.*, as a branch of mathematics, without much regard to the real value of the methods developed, or the ease with which they may be applied by the average draughtsman, usually with very little time to spend on the solution of intricate problems when preparing a competition perspective, or a sketch for publication. The objects selected for examples of the application of the methods are, too commonly, not those which most frequently occur in practice, so that the student obtains very little knowledge of the apparent forms of objects in perspective. Unfortunately, this kind of perspective is that generally taught at technical schools, where the study is usually considered merely as a branch of Descriptive Geometry, and the subject is assigned to an instructor of inferior rank, already fully occupied with other work, and who has had little practical experience in actually working out the perspectives of architectural structures. Consequently, when the student has completed the study, and is afterwards called on to draw a perspective of a given building, he finds many questions arising as to the best point-of-view, direction of light rays, proper scale, and, above all, what methods should be employed to obtain the required drawing in the quickest and simplest way. These difficulties were not noticed in his course of study. He either makes several attempts, wasting both time and patience, gradually learning from experience, or he goes to an expert perspective draughtsman and obtains "points" and instructions. In either case the student is pretty certain to come to the conclusion that his school training in the study is of very little practical benefit to him, and it is often discarded as useless, and forgotten.

2. As a purely practical study, paying no attention to its relation to Descriptive Geometry. This system is that commonly used by perspective draughtsmen when employed to give private lessons to other draughtsmen, who merely desire to acquire the simplest methods for doing the work, having but little time to spend in its study. They are taught special methods, which have been found suitable for the ordinary forms of buildings, usually without any explanation of the laws on which these methods are based, or of the relation of one method to another. This mode of teaching the subject makes the student merely an animated machine for obtaining certain results, limited to the methods taught him, and very apt to make serious errors in attempting to apply them to problems of different character, with which he is unfamiliar.

It therefore becomes evident that the best method of teaching Perspective would be to pursue a middle course, lying between the two extremes already pointed out, paying attention to the principles of Descriptive Geometry underlying all perspective methods, so that their relations may be clearly understood by the student, who can then employ any special method best suited to the case in hand, passing from one to another without difficulty: at the same time, the actual methods used must be those in practical use among draughtsmen, unless simpler ones can be devised, and such as will most quickly and easily accomplish the desired purpose. Such a course of instruction prepares the student for even devising original methods, whenever required for particular cases, if he possesses the requisite ability and inventive faculty.

Every draughtsman who has ever dabbled in Perspective, especially when it was used for purely artistic purposes, as for the correction of free-hand sketches of landscapes, buildings, etc., has observed that in certain cases, especially when the view embraced a large visual angle, many discrepancies and distortions of form occurred, particularly near the outer limits of the picture. If carefully drawn by perspective methods some objects appear so much distorted as to become too offensive to be tolerated; consequently, a general impression appears to be prevalent among artists, that a knowledge of perspective may be valuable, but that it is only applicable to buildings, and is of very little assistance to artists. It is therefore usually taught in most Art Schools in a sort of perfunctory and general way, with little real accuracy, and few such teachers ever take the trouble to explain the real cause of these distortions to their more observant pupils, and to show them how to make the proper corrections in the best and simplest way. This difficult portion of the subject requires careful treatment in any exhaustive work on Perspective.

Professor Ware has exactly appreciated these requisites for a mode of treatment best adapted to the practical needs of the draughtsman, without neglecting the scientific basis of the subject. Having the advantages of great experience and an extensive study of earlier works on the subject, the author has produced a work better suited to the wants of both the technical student and the draughtsman than any other previously existing, one which may be termed a Cyclopedia of Perspective, as it contains all he will ever need to know of the science. Although the applications are principally made to architectural subjects, the best methods of drawing the perspectives of circles are fully explained, so that the work will be found as valuable to the Civil or Mechanical Engineer as to the Architect.

Much original material has been added to our knowledge of the science by the author, especially in the use of perspective plans, the study of distortions and corrections, the perspectives of divergent lines and shadows, particularly with the source of light behind the observer, and also in Cylindrical Perspective, besides the fact that much other material is now presented in a convenient form, and made accessible to the student for the first time.

The work commences with a general consideration of the appearance of objects in perspective, when viewed from different points and under various conditions, with an explanation of the more common technical terms, and a statement of elementary principles.

In Chapter II, the picture is itself considered, with special insistence on the fact that the vanishing-point of any system of parallel lines will always be the point in the perspective plane pierced by a parallel line through the eye, and will also be found in the perspective trace of any plane containing either of the given lines. This principle is not often clearly stated in text-books on Perspective, but appears to be left to be discovered by the student. A special and original notation is introduced, much more simple and convenient than that employed in works on Descriptive Geometry, and which is used throughout the book.

Chapter III is devoted to the consideration of the perspective plan, its uses and practical applications being fully and clearly stated. The special advantage of its use is that several plans, taken at different horizontal levels, can be drawn beneath each other, and points are then projected up to the perspective or picture, thus avoiding all danger of the errors arising from using incorrect points, which are very apt to occur in the common method, in which the orthographic plan is employed, with lines radiating from the station-point and intersecting the ground-line of the perspective plane. The method of perspective plans is especially valuable and convenient in obtaining the perspectives of tall buildings, particularly when each story is of a different design, as a separate plan can easily be made for each story.

The methods of dividing perspective lines by the use of triangles and diagonals are then introduced, and afterwards more fully developed in Chapter IV, where the general applicability of the methods is exhibited, with satisfactory evidence that a large amount of work and time may be saved by their use, especially in obtaining the perspectives of large and elaborate structures. A demonstration of Gwilt's method for dividing perspective lines is given, and the method is much improved, by showing that the line drawn through one end of the given line, parallel to the second line, need not be of the same length as the first (as stated by Gwilt), so that dimensions could at once be laid off on it by scale, and then transferred directly to the perspective line to be divided, provided that both ends of this line are previously located. A knowledge of the applications of this method of dividing perspective lines, and of the uses of perspective plans, would alone be worth more to any perspective draughtsman than the entire cost of the book.

So far, the principal lines and points of the picture have been merely located by the eye, but in Chapter V, graphical methods are given for finding their exact locations and directions, the dimensions and forms of the objects as well as the point-of-view being assumed to be fully known. These methods are found to be of exceptionally easy application in case the principal lines of the object make angles of forty-five degrees with the perspective plane.

Chapter VII treats of Parallel Perspective, the uses of distance-points, and the proper mode for commencing a perspective of this kind, with a description of the uses to which it is properly applicable.

Chapter VIII is devoted to the Three-point Perspective, in which all the principal lines of the object are inclined to the perspective plane. Cases of this kind sometimes occur, as in the furniture of interiors, etc. Photographs of buildings are really in three-point perspective, when taken with a camera whose optical axis is inclined upwards or downwards, the sensitive plate being also perpendicular to this axis, and not vertical. This causes tall towers to appear to lean inward toward each other, since the vertical lines of the façade appear to radiate in this case from a vanishing-point. Such photographs really represent the appearance of the building to the eye, but

[1] *Modern Perspective*, a Treatise upon the Principles and Practice of Plane and Cylindrical Perspective, by Professor William R. Ware. Boston, Mass: James R. Osgood & Co., 1883.

are apparently incorrect, since they are viewed under different conditions.

The perspectives of the shadows of sunlight are considered in Chapter IX, and the very valuable practical suggestion is made that, if the sun be assumed to be located in the perspective plane at an infinite distance, its rays are parallel to the plane of the picture; their perspectives will therefore be parallel to each other, and will be easily found; also that this position of the sun will be almost invariably certain to produce a picture in which the light and shade is properly arranged for obtaining a picturesque effect. This remark solves a difficulty which perplexes even experienced draughtsmen not a little. Simple methods are also given for determining whether the plane surfaces of objects represented in the picture are in light or shadow.

Chapter X treats of the perspectives of reflections, which is reduced to the general problem of finding the reflection of a line and the vanishing-point of this reflection, as well as that of the projecting lines drawn from the given line normal to the reflecting surface. If the given lines be normal or parallel to the reflecting surface, the vanishing-points of their reflections coincide with their own.

In Chapter XI it is shown that the perspective of a circle may be either a circle, an ellipse, a parabola or even an hyperbola, according to the conditions under which it is seen. Its perspective also frequently appears quite different from the actual object, when directly observed, thus causing singular distortions in the picture, which become apparent when the picture is looked at from any point other than its true point-of-sight. Methods are also given for obtaining the perspectives of circles in any position.

The next chapter is devoted to a consideration of those curious distortions which frequently appear, to bother the draughtsman, especially in Parallel Perspective. Directions are given for suitably correcting them, so that they may not appear offensive to the eye. These would not be apparent if the picture were only viewed from the station-point employed in its construction. Since the exact location of the proper point-of-view is seldom indicated on a perspective, and is sometimes to be found only with considerable trouble, a perspective drawing must not appear incorrect when viewed from any other point-of-sight, not too far removed from the true station-point. As these distortions increase from the centre of the picture towards its edges, the maximum visual angle subtended by the picture is thereby limited to sixty degrees or two-thirds of a right angle.

These distortions become especially offensive to an educated eye in the case of statues, animals, or human figures, so that these are usually represented in the picture as if each figure were directly observed and really occupied the centre of the view, or as if the perspective plane were shifted so as to be perpendicular to the middle visual ray directed towards that object alone. When such objects are combined with architectural forms or lines, as in the case of a statue and its pedestal, or a group of figures in front of a building, the two kinds of forms are very apt to produce an unpleasant effect in conjunction, so that an artist usually makes the architectural background of his picture as simple as possible, masking and interrupting its lines by groups of figures and similar devices. The real cause of this want of harmony is that the architectural portions are drawn in Plane, and the figures in Cylindrical Perspective. This is doubtless one of the reasons that artists attach far less importance to the study and use of perspective, than do architects. Examples of these difficulties in harmonizing figures and architectural forms in perspective may be seen in almost any good collection of engravings or paintings.

Chapter XIII treats of the phenomena and methods of Cylindrical Perspective, in which the objects are represented on a cylindrical perspective surface, instead of a plane, just as if each object were directly observed and placed at the centre of the picture. This causes the perspectives of long straight lines to appear curved, though this is obviated by making them broken, whenever possible. A much wider visual angle may be employed, as the amount of distortion does not increase from the centre to the edges of the picture. This kind of perspective is naturally employed by an artist, or any person ignorant of perspective, in sketching from nature, since each object is drawn just as it appears when observed directly. If the attempt be then made to correct this sketch according to the laws of Plane Perspective, difficulties are soon encountered, and the conclusion is frequently reached that the laws of perspective do not apply to sketches made from nature.

The subject of the perspectives of divergent or convergent lines, embracing shadows cast by artificial light, is next examined, the phenomena being found to be somewhat similar to those already observed in connection with parallel lines, though the methods to be used are more complex. The theory and practice of obtaining shadows cast by artificial lights are very fully explained, both when the light is in front of the spectator, and also when placed behind him, a much more novel and difficult position. This kind of perspective finds its application in some forms of scene-painting, and in the representation of interiors lighted artificially. It will probably become of considerable importance, on account of the great attention now paid to the designing of interiors, and the ease with which photographs of interiors are now obtained by the aid of the electric-light and dry-plate photography.

In Chapter XV some special practical methods are examined and explained, of which the following are the most important: —

1. The common method, familiar to every draughtsman who has ever paid any attention to perspective, but rendered much more convenient by the use of the perspective plan.

2. The method of Ordinates. Points are located by their space co ordinates, which is rather tiresome in its application, though convenient for bodies of irregular form.

The writer has found a modification of this method (suggested in the eighth edition of the *Encyclopedia Britannica*, article "Perspective,") to be occasionally quite convenient in practice, being also a method which could be readily taught to students having little or no previous knowledge of Descriptive Geometry. The positions of the vanishing-points and of the ends of some principal perspective lines of the picture can easily be found by calculations, quickly made by the use of the slide-rule, or of four-place logarithms, and the lines can then be divided by Gwilt's method. Adding to these the use of the perspective plan, draughtsmen would be enabled to draw correct perspectives of ordinary architectural structures, with the least possible amount of preliminary study of perspective.

3. The method of Squaring. This is only required for objects of very irregular plan or form, and consists in dividing the plan into similar squares, which are first drawn on the perspective plan, the outlines of the actual plan being afterwards sketched in by their aid.

4. Adhémar's Method. This comprises certain special features, of which the more important are the following: —

a. Drawing portions of the object in orthographical projection at a reduced scale, then laying off their dimensions at a proper distance behind the perspective plane, where the scale is suitable, instead of laying them off in the picture plane at the same scale as the perspective, then projecting them back to the places where they are required.

b. The use of a perspective plan made on inclined planes. To make this equally distinct in all its parts, it is supposed to be divided into strips of proper width by lines parallel to the ground-line, and these strips are tilted up at increasing angles, thus increasing their apparent width, and the distinctness of the plan thereon.

Professor Ware suggests a valuable improvement, which consists in sinking the successive strips to lower horizontal planes, at the same time elevating the station-point from which each strip is seen so that the edges of the strips appear to coincide, producing a continuous plan. The results obtained are identical with those found by Adhémar's method, and the process is less troublesome.

This method is particularly valuable for obtaining the perspective of an object of complex form and circular plan.

The reverse process, of finding geometrical drawings of an object and its actual dimensions, from a given perspective or photograph, is next explained. It is sometimes possible to do this, but is generally impossible unless some of the actual dimensions of the object or its distance from the spectator are known.

In Chapter XVII is to be found a very convenient *résumé* of the principles and methods previously developed, arranged in convenient form for reference.

Chapter XVIII contains applications of Perspective to problems of Descriptive Geometry, such as are usually encountered in practice, with their solutions, forming a very interesting collection, especially valuable for reference in cases of doubt.

The concluding chapter is devoted to very practical advice as to the proper mode of commencing a perspective, of determining the best proportions of the picture, positions of station-point and object, etc. Some instrumental aids are also described. This portion of the work might have been extended with considerable advantage, the author being so well qualified by long experience to pronounce on the practical value, and describe the uses of the numerous forms of "centrolineads," "perspective lineads," etc., which have been devised by various persons for abbreviating the labor and time required for drawing a perspective, or for obviating difficulties arising from inaccessible vanishing-points, etc. Such information is of value, and possesses great interest to young draughtsmen. It would also serve to answer the periodically recurring question, "How shall I set my centrolinead."

Professor Ware is richly entitled to the gratitude of the profession, for he has produced a very able and scholarly work, as the result of extensive studies and great labor, and which merits the highest commendations, because it is so well adapted to the use of the technical school, as well as to serve as a practical manual for the private study of the draughtsman. It is written in a clear and pleasant style, and the subject is invested with an unusual degree of interest. The plates are well executed, are entirely original, with the exception of a very few figures, and are devoted to architectural subjects. They are also arranged in a separate portfolio, so as to be most convenient for study. Considering the cost of publication, and the great amount of labor required in the preparation of the text and plates, the price of the work is very reasonable. No architect or draughtsman can afford to be without it.

Heating by Acetate of Soda. — The heating of small pits and greenhouses is, in spite of the numberless apparatus in use, a source of trouble. To such folk — and their number is legion — the new plan of heating by acetate of soda seems as if it might be developed into something serviceable. According to an article in *Nature*, the plan is largely adopted on the London North Western Railway for foot-warmers. The duration of heat in a warming-pan with acetate of soda is claimed to be four times that of hot water alone. This is due to the amount of heat required in the first instance to change the acetate of soda from a solid to a liquid state, which heat is liberated as the acetate gradually resumes a solid form. It is stated that only about half the heat is required to produce the same effect as in the case of hot water. The acetate does not require to be renewed except at long intervals. To restore the heat in the pans after cooling, they have simply to be plunged in boiling water for half an hour.

THE LATE AMERICAN ARCHITECT COMPETITION.

REPORT OF THE JURY. — V.

"*NORTH STAR*" [No. 1] has an excellent plan. Note what a pretty effect the stairs would have from the hall. The latter we should have preferred to provide with a vestibule. The china-closet has no light and would have found a better place where the kitchen entry is. This competitor has frankly made a large living-room to serve as dining-room as well, and the parlor is smaller. Four chambers, bath-room and attic-room compactly fill the upper floor. The exterior is judiciously broken up by simple means and has a homelike appearance. The details are carefully designed and well drawn, but the perspective shows a surprising want of skill in the use of the pen in free-hand work. The estimates given are fair, and the house would be worth building at those prices.

"*Domus*" [No. 1] has evidently more practical than artistic experience. His perspective is one of the most unpleasant experiments imaginable — its extreme neatness is not a fault, but is quite unable to redeem its harsh crudeness. The preceding designer failed from his ignorance of free-hand drawing, but that failure was more tolerable than this attempt to line-in everything with the drawing-pen. The detail-sheet is more successful, and the plan is good except for the ugly corner entrance into the sitting-room and the lack of any door into the dining-room from the hall. Upstairs all is well.

The author of the design marked with a monogram of "*Alpha and Omega*" has a good plan; the rooms on each story communicate well; the stairs are economically managed, and though in general it is disagreeable to have them between closed walls, here they are so liberally lighted by a large window that they would escape a dismal effect. We should transpose the position of pantry and china-closet, as the window is most used in the latter, to avoid leaving the door open into the dining-room. The character of the exterior is appropriate, and except a slight complication in the roofs is economical. We commend the neatness and intelligence shown in the sheet of details. This design was received after the prescribed time, and was not counted in the competition.

"*North Star*" [No. 2] has a long, narrow plan with library, parlor and dining-room *en suite*, a liberal disposition which is not, however, satisfactory, inasmuch as the dining-room is only reached through the library. It is a fatal error to make this latter room the only means of communication between the kitchen and front of the house. This might easily be remedied by a door through the china and coat closets to the hall. Upstairs the bath-room and various closets are much larger than is needed. The two chimney-stacks in library and parlor serve no purpose which a single one would not perform. In general this design needs condensing; the length is inordinate.

"*Home*" [No. 2] shows his inexperience in various ways. The outline of the plan is wastefully irregular; the upper hall is without light, except through a skylight which is not indicated. The back stairs are not well combined with attic flight. The bath-room is placed over a landing of the staircase where there is no proper opportunity for carrying down pipes and where a leak would be disastrous. Credit is due for grouping the fireplaces of the three principal rooms of first floor around one chimney, and for convenient communication between the different rooms. The drawing of the perspective and details shows the uncertain touch of inexperience, but there is equally great evidence of painstaking and intelligent labor, which promises well for the future.

"*Promotion's*" design is quiet and rustic, and its plainness is agreeably varied by the porch on two sides, without, however, keeping the sun from the principal rooms. Details and elevations are well drawn. The balustrade of the stairs could only be made with much care and expense, owing to the curves employed, which ignore the natural character of wood. The defect of the plan lies in too large a hall. The common device of letting the upper part of the front stairs, after they pass out of sight of the hall, be joined by the back stairs is here misapplied, for the half-flight from the kitchen joins the main stairway in full sight of the hall and front door. A reduction of the size of the hall would make this design more economical than several of the preceding ones; in fact, it ranks among the best in this respect.

"*Pencillaria's*" design is ingenious and attractive. By careful study he has turned an unpromising scheme into an excellent plan. Room is economized with great skill. An inherent fault lies in having to pass from kitchen to front hall through the dining and living room. The exterior could have been made attractive without the many breaks which now form a serious item of cost, and the outside chimney for the fireplace in the parlor alone is an expensive luxury. This want of self-denial prevents the design from taking rank beside those which have been made attractive by simpler means. The drawing is neat and crisp throughout, but in the detail of the fireplace there is evidently a slip which throws it out of true perspective.

"*Colonna*" presents a novel and ingenious plan kept within a rectangular outline. He has made several marked economies of varying value. Thus, while providing flues, except in the "den" he has no fireplaces. This recourse to stoves would have been less intolerable a generation ago than now. Another economy, which would effectually prevent the house from finding an occupant of the kind intended, is the omission of a bath-room. More successful is the arrangement by which the front stairs meet the back stairs on a common landing projected out as a handsome bay. Nothing indicates the use the space under this landing is put to, and no door nor window opens into what might be valuable space. The elevation, with its gambrel roof, cannot be counted a success; it is clumsy, and the lines do not mass well. The plumbing item of $35 is of course too low, and to this should be added the cost of a well-appointed bath-room. The drawings are treated with a spotty exaggeration of light and shade which defeats its own purpose.

"*M. N.*" (*see illustrations*) challenges attention with his quaint old farm-house, which has many good features. A critical eye is at once struck with the discrepancy between the stud of the main house and that of the L. The second-story chamber in the L must be very low-studded — indeed, it does not seem possible to approach the narrow frieze of windows except on hands and knees. The plan has been well thought out; the dining-room and parlor open widely together, and the chambers are well placed. The drawings reveal a skilful hand, and the details designed are suitable to our modest programme.

"*Try*" was unfortunately received too late, or he would have taken one of the first places in the competition. His plan is complete, and yet covers a very small area. Not an inch is wasted, and there is no sense of pinching in the cheerful circulation offered, except in the dining-room; for this room nine feet is too narrow, and a bay should have been thrown out from it instead of from the parlor, which, having light on two sides, could well dispense with the bay. The only fireplace is in the parlor. The elevation is unusually attractive, from its mullioned windows and overhanging double gables, but these latter are far from economical; for the cost of their framing and the flashing needed in the valley, the roof could have been carried up high enough to give rooms for servants in the attic, who now must occupy one of the four bed-rooms on the second floor. While the detail-sheet shows simple and refined work, within our limits of cost, the perspective shows carving or moulding in numerous panels, of which no mention is made in specifications or in the estimates. The drawing is of the utmost brilliancy.

"*Orioles*" has evidently spared no pains to make his design attractive. He must count it his misfortune that his accessories, human and animal, do not impress the jury in the way that his ingenuous spirit expected. The programme had nothing which suggested a Noah's ark, nor were the children of Ham required in evidence thereof. However, as the fervent imagination of this competitor has not overlooked practical questions, it is but his due to say his plan is conveniently arranged in detail. It is a severe drain on our appropriation to place the kitchen and laundry in the basement, where a generous wine-cellar is quite out of place; but, as the area covered by the plan is small, this basement story might in some situations be a very proper expedient. The natural gable end of the house is hipped back to form a small gable in the attic, uncovering a chimney against the outer wall in a most awkward way. Let "*Orioles*" make his experiments in *genre* subjects elsewhere than on the sheets of his architectural drawings, and he will later in life be better pleased with himself.

The design with the device of a "*Crescent Moon*" is so excellent in detail that it requires little criticism. It ranks among the best, but did not have the distinction of treatment which characterized the first three or four designs. It could be built about as it stands with credit to its architect and satisfaction to the owner.

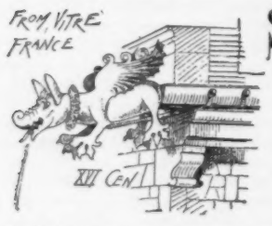
"*Mead's*" plan is better than his elevation, which is one of the worst in the competition, showing either utter inexperience or else ignorance of good models of architecture. Note the monstrosities which do cumbrous duty as supports to the light piazza roofs. There is no evidence of the designer having read the programme. Besides having a plan with four principal rooms below and a very large hall, he has a brick first story carried out even in the L. Five times the sum allowed would not suffice to erect such a building — even without an architect — and we trust "*Mead*" will make much progress on paper before he is intrusted with the simplest bit of design.

In closing this report the jury gladly bears witness to the earnest spirit in which the great majority of the competitors have met the requirements of the programme. If there have been errors of judgment in details of probable cost, if inexperience has suggested ambitious features sometimes, still the effort has rarely been to avoid an honest solution of the problem, and such efforts should go before the public as suggestive and useful data for a class of buildings which need careful attention.

H. W. HARTWELL,
EUGENE LETANG,
ARTHUR ROTCH. } Jury.

AMERICAN WOODEN CHURCHES. — In his new volume on American topics Mr. Freeman, the historian, makes the following observation on ancient wooden churches that came in his way while he was here: "I have seen old-fashioned wooden churches in America for whose details of course there was nothing to say, but whose general effect was a good deal more venerable than that of an ancient English church on which a modern architect has been let loose to play his tricks."

THE $3,000-HOUSE COMPETITION. — XI.



SPECIFICATIONS of material to be used and labor to be performed on dwelling-house for young man of unexceptionable position, by "*M. N.*"

Excavate where necessary.

Cellar walls and Foundation of field stones, laid dry, pointed with strong lime-mortar; underpinning of handsome stone, solid in mortar; rubble drain under walls.

Cesspool of stone; stone cap with man-hole. Vitrified drain-pipe with traps, put together with cement.

Chimneys and Piers hard-burned bricks, bottom courses in cement; top of chimneys selected bricks, laid in red mortar.

Fireplaces and Hearths of face-brick in red mortar. Plaster chimneys inside and outside to roof.

Frame, good spruce of sufficient sizes.

Floorings bridged. Truss openings and where necessary.

Walls and Roofs covered with good spruce. Under floors good spruce. Cover walls, roof, and under floors with thick sheathing-paper.

Plaster, two-coat work.

Outside Finish, good pine stock.

Flash thoroughly for tight job.

Shingles, sawed cedar (clears), on walls and roofs.

Piazza floor, narrow hard-pine.

Floors:— Upper floors of Hall, Parlor, Dining-Room and Kitchen, narrow rift hard-pine; principal chambers, matched white-pine; other floors spruce. Inside finish, best quality white-pine.

Closets: — China-closet fitted with shelves, drawers, cupboards and glass case. Pantry with drawers, bins and shelves. Other closets with shelves, strips and hooks.

Hardware, $2.50 per door on average.

Stairs, main flight, hard-pine treads and risers; rest white-pine; cellar stairs, spruce treads and risers.

Doors:— Front, 2″ thick; principal on first story, 1¾″ thick, six-panelled; others, four-panelled; closets, 1¼″ thick, flush mouldings.

Window-frames, 2″ sills, hard-pine pulley-styles, sashes 1¾″ thick. Cellar windows hung with butts, glazed with double-thick American glass. Blinds on all windows practicable.

Plumbing:— Kitchen sink, bath-tub and water-closet properly ventilated and drained.

Painting:— Trimmings, two coats lead paint; shingles, two coats stain. Hard-pine floors, one coat of preservative. Inside finish, one coat stain, two coats shellac.

Cellar only under "L."

ESTIMATE OF QUANTITIES AND PRICES RULING AT BOSTON.

10,000 ft. frame and partitions	$170.00	Stairs	$100.00
7,500 ft. covering and under floors	123.75	Nails, 800 lbs.	43.00
600 ft. outside finish	30.00	Sheathing-paper, 500 lbs.	25.00
1,050 ft. hard-pine floor	57.75	Lead and zinc	15.00
1,200 ft. white-pine floor	66.00	Painting	175.00
4 0 ft. base "running foot"	40.00	Plastering	250.00
1,300 feet inside finish "running foot"	80.00	Mantel allowance	50.00
28 M. shingles	126.00	Excavation	20.00
1 dormer	30.00	Stone-work	80.00
27 windows and blinds	216.00	Brickwork	150.00
5 closets	25.00	Plastering grounds and beads	20.00
China-closet and pantry	40.00	Labor	750.00
3 cellar windows	6.00	Plumbing	200.00
24 doors	192.00	(Estimated by competent builders)	$3,155.50
Piazza	75.00	Architect's commission would be	150.00

WATER-CLOSETS. — XII.

TYLOR'S Pan-Closet. — Tylor & Son, of London, invented in 1878 a pan-closet receiver in which the trap and receiver were combined in one piece, both being above the floor. In this closet there is an inspection-hole in the crown of the trap, but no vent-pipe. The same firm manufacture an earthenware container, which is yellow on the outside, and glazed with white on the inside. The top or cover to this container, and to which the mechanism is attached, is composed of galvanized iron; having the working parts connected with top of the receiver, the opportunity for breaking the earthenware portion is lessened.

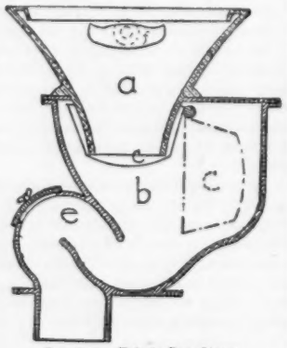


Fig. 116. — Tylor's Pan-Closet.

a, Bowl. *b*, Receiver. *c*, Pan. *e*, Trap. *f*, Fan.

These manufacturers also have a patent for a sprinkler to be connected with the container of a pan-closet. The sprinkler is divided into two branches, and is carried partially around just below the top of the container. In it are a row of small perforations. The sprinkler is connected with the supply-pipe, and when the water is turned on to flush the bowl, small jets of water are thrown against all sides of the receiver, from the different perforations. No doubt such a device would be of some service, although I have little confidence in an arrangement placed as this is, out of sight and out of mind. The pipe would corrode and collect the spatterings from the container. A pan-closet with an earthenware container, that has a flushing arrangement and is properly ventilated, the pan being opened or shut by a simple crank and held in position by a weighted lever, would probably form one of the best arrangements for a closet of this class. Underhay, of London, also supplies a white earthenware container with the pan-closets which he manufactures, when there is a call for them. It seems remarkable, when their faulty construction is considered, that such a large number and variety of these closets should have been used in this country.

Fig. 117. — Container and Sprinkler.

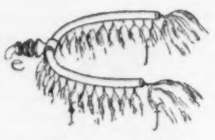


Fig. 118. — Sprinkler.

Tylor's Pan-Closet.

a, Receiver or container. *b*, Supply-pipe. *c*, Sprinkler. *e*, Coupling. *f*, Jets of water.

Bartholomew Pan-Closet. — The Bartholomew closet takes its name from the supply-valve, which was patented in 1854–1858. This closet, if the number used were a correct criterion, might be considered one of the best of the class. I give the illustration of this closet as it is manufactured by Henry Huber & Co., of New York; it has a simple weighted lever, pan, container and bowl. The supply-valve, on which the novelty is claimed, is screwed to the top of the container, and has a dish or basin formed by a rim raised on the top of the container, to catch any leakage from the supply-valve.

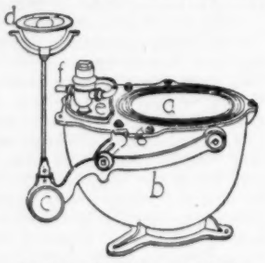


Fig. 119. — Bartholomew's Closet.

a, Pan. *b*, Receiver. *c*, Weight. *d*, Saucer. *e*, Place for drip. *f*, Supply. *g*, Top of receiver.

The "Monitor" Closet. — The same manufacturers supply a closet patented by W. S. Carr in 1872, under the name of the "Monitor" closet, which has a piece bolted to the side of the container, that can be easily removed. This is intended to be used in case the pan should need repair, or the container need cleaning out, contingencies which may be looked upon as certainties. "All the trouble of shutting off the water, taking down the seat and detaching the bowl from the top of the receiver is avoided." In the last-mentioned closets the bowl is simply set on the receiver, the bottom projecting through the hole made for the purpose. There is no arrangement for screwing or clamping to the receiver. The "O. I. C." closet is the "Monitor" closet without the removable plate. In the illustration of the "Monitor" closet, one of Carr's supply-valves is shown in position. Huber & Co. supply these closets with the receivers tarred, zinc-coated (galvanized), or enamelled, and they may be attached to a tank or cistern, instead of directly to a water-main, for the supply to flush them. Vent-couplings are also furnished, when desired, that can be connected with the top of the receiver by means of threads cut into the top of the receiver, into which the brass coupling may be screwed, and a lead pipe soldered on it. The lever in the "Monitor" Closet is made so it can be adjusted to different lengths.

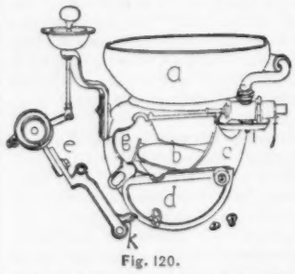


Fig. 120.

"Monitor" Closet with side-piece removed.

a, Bowl. *b*, Pan. *c*, Container. *d*, Removable piece. *e*, Adjustable weighted lever. *f*, Supply-pipe and valve. *g*, Spindle. *k*, Stud for operating supply-valve.

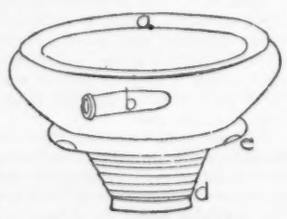


Fig. 121. — Circular Bowl.

Harrison's Pan-Closets. — Chas. Harrison, of Philadelphia, manufactures a number of pan-closets that differ from each other in the position or mechanism of the supply-valve, or in the weighted lever. Harrison furnishes with his pan-closets, when desired, a pan made of rubber, of which he says: they "are non-corrosive, and are impervious to acids."

Bowls are manufactured for pan-closets in a variety of shapes, and it seems appropriate to give a description of the different forms in connection with this class of closet, although the same style of

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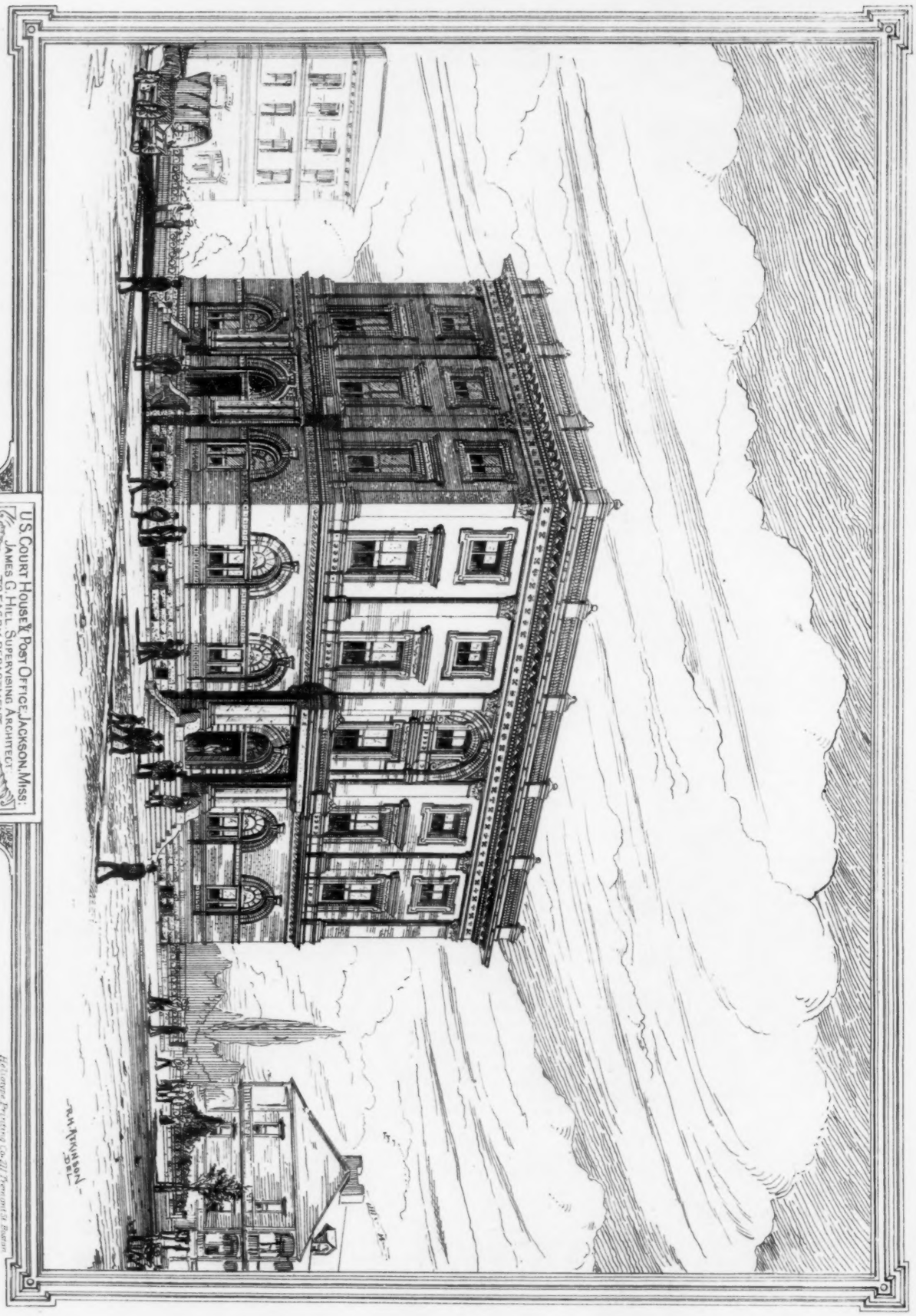

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JAMES G. HILL, SUPERVISING ARCHITECT,
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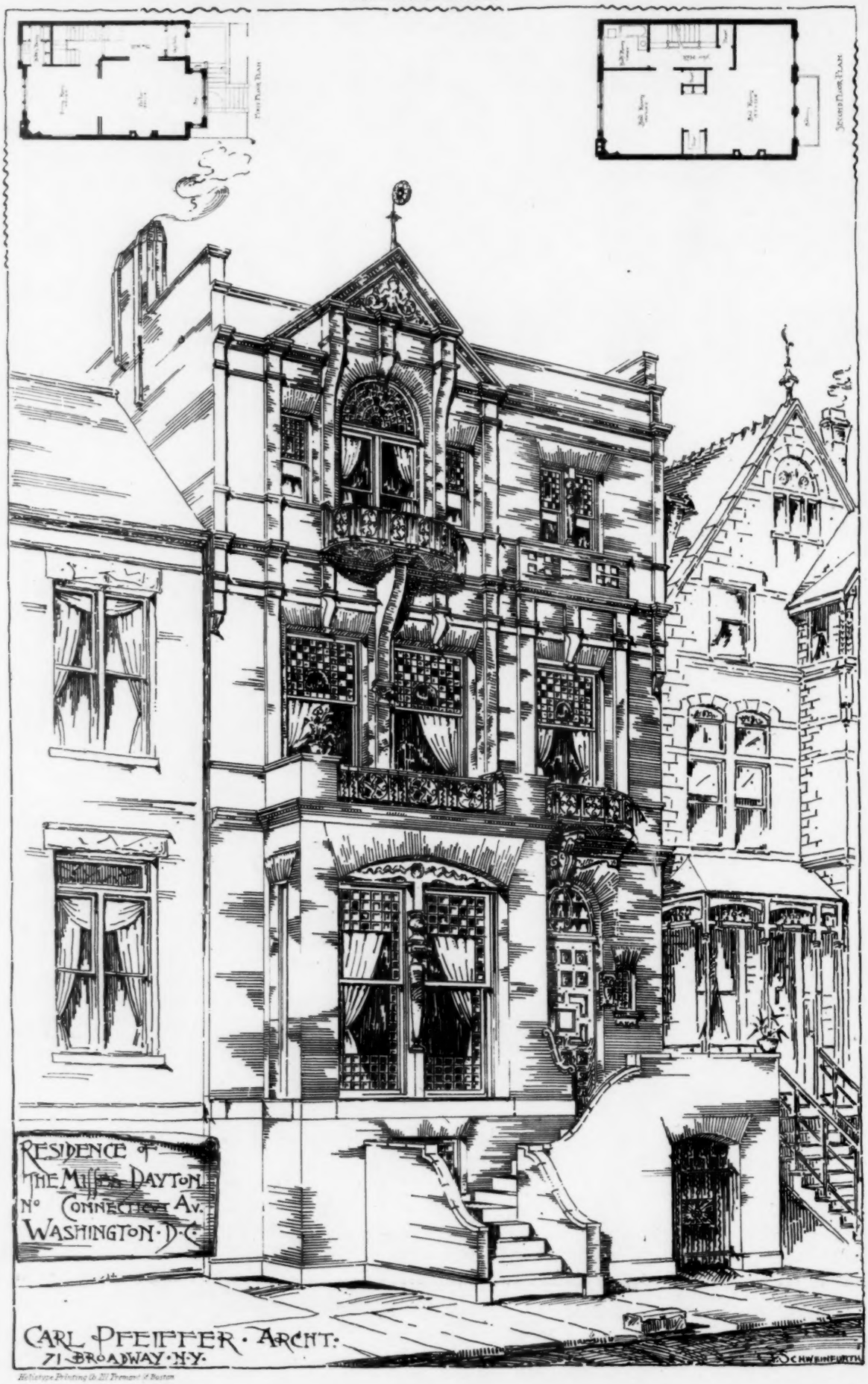

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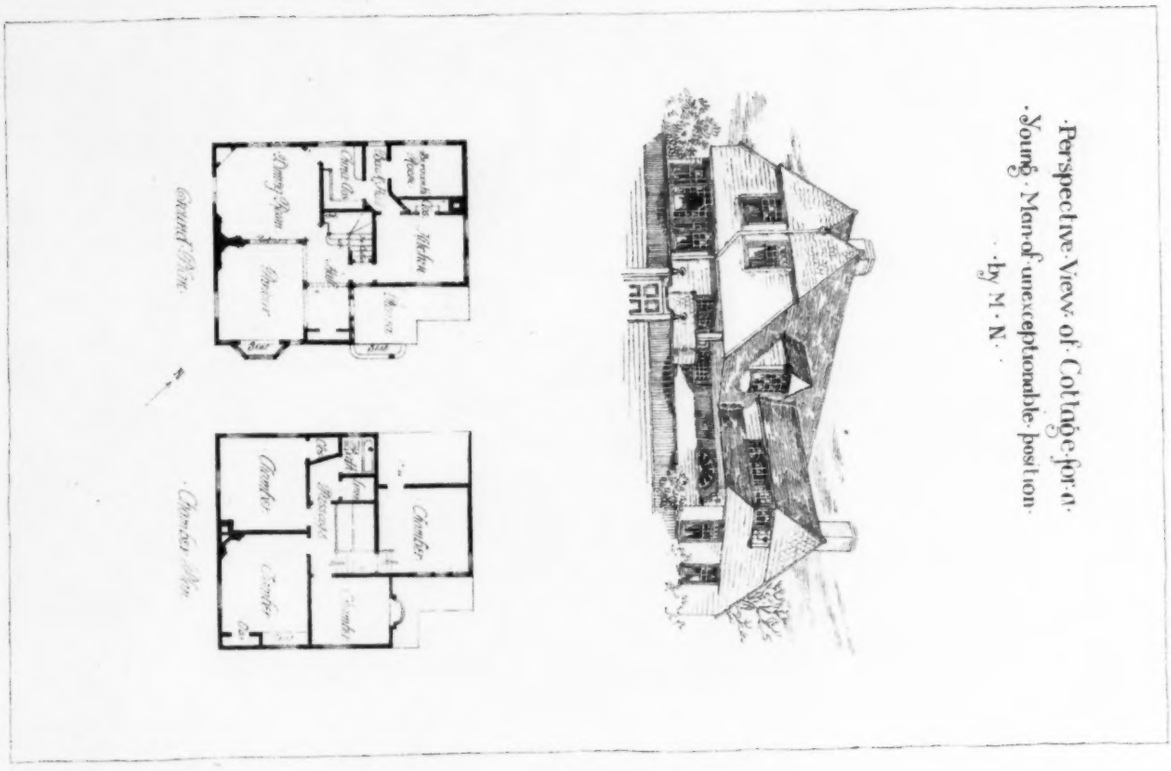

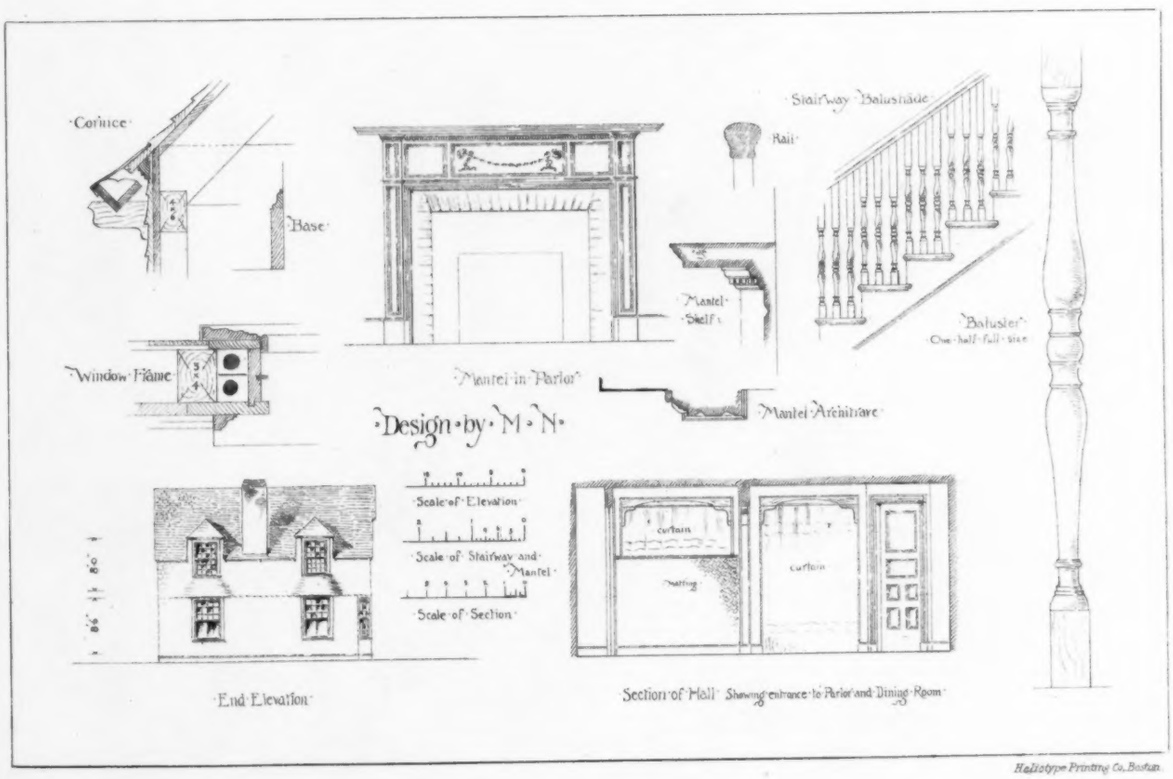

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TOWN HALL, NORTH EASTON, MASS.

H. H. RICHARDSON, *Architect.*

Heliotype Printing Co., 211 Tremont St., Boston.

bowls are sometimes used in connection with iron hoppers, and properly come under the head of hopper-closets.

Pan-Closet Bowls. — The most objectionable, as well as the most common form of closet-bowl is circular. The water to flush the bowl comes through an opening a little less than half an inch in diameter, when the lead pipe has been inserted into the

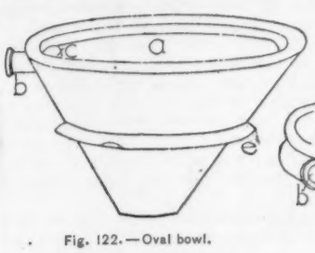


Fig. 122. — Oval bowl.

a, Flushing-rim. *b*, Orifice for supply-pipe. *c*, Vent. *e*, Rim to rest on top of container. *d*, Portion of dip-into-pan.

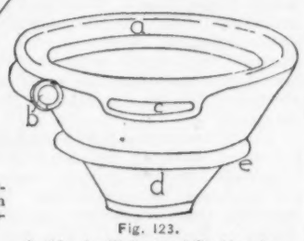


Fig. 123.
Oval bowl with Vent and Flushing-rim.

earthenware orifice made for the purpose. The water when turned on forms a puny, spiral stream, that does little if any good in flowing around the sides of the bowl. These bowls are sometimes furnished with flushing-rims. There are conical bowls in which the supply of water is brought in at right angles with the circumference, the water being spread over the surface by means of a fan of metal screwed on the bowl. The orifice in which the lead pipe is inserted is generally an inch and a quarter in diameter in this form of bowl. These bowls are manufactured with an opening near the top, in which a pipe to ventilate the bowl of the closet may be inserted.

Fig. 124. — Old.

Fig. 125. — New.

Ship Closet-bowls.

There are two kinds of bowl manufactured for ship-closets, both of which are sometimes used in connection with valve-closets. One is conical, the other is hemispherical. The Enterprise Pottery Company make what they call a square French closet-bowl. This bowl has a flushing-rim, and answers for a drip-tray safe and a slop-sink as well as for a urinal.

THE ILLUSTRATIONS.

TOWN-HALL, NORTH EASTON, MASS. MR. H. H. RICHARDSON, ARCHITECT, BROOKLINE, MASS.

[*Gelatine Print.*]

THE walls of the tower and first story are of a local granite, of a warm reddish tinge, and the cut-stone throughout is Longmeadow. Red Akron tiles cover the roof; the upper walls and chimneys are of red brick. A large hall 75 feet long (including stage) by 46 feet wide, occupies, with dressing and cloak rooms, the second floor; above is a Masonic Hall, below a smaller hall and rooms devoted to various uses. The building is approached by a broad flight of brown-stone steps winding about, to take advantage of the rocky nature of the site.

COMPETITIVE DESIGN FOR A $3,000-HOUSE SUBMITTED BY "M. N."

FOR criticism of this design, see the Jury's Report, elsewhere in this issue.

SHOULD any of our non-professional readers desire to build according to this design, we trust he will do the author the simple justice of putting the work into his hands. We shall always be pleased to put client and author into communication with each other.

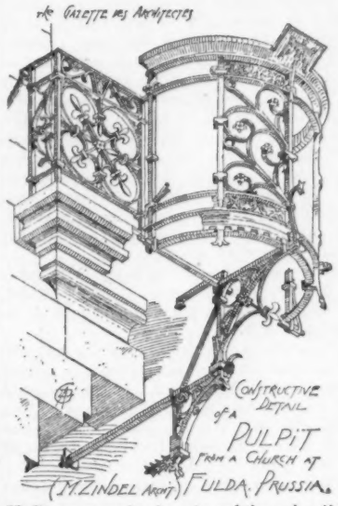
HOUSE OF G. A. HULL, ESQ., NEWTON, MASS. MESSRS. PRICE & FREEMAN, ARCHITECTS, NEW YORK, N. Y.

UNITED STATES COURT-HOUSE, JACKSON, MISS. MR. J. G. HILL, SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT.

RESIDENCE OF THE MISSES DAYTON, WASHINGTON, D. C. MR. CARL PFEIFFER, ARCHITECT, NEW YORK, N. Y.

A DUELLISTS' RENDEZVOUS. — The demolition of an ancient house in the Rue du Jour to make room for the new Paris Post-Office recalls the strange use to which it was put two hundred years ago, when it was owned by Francois de Montmorency, Comte de Boutteville, and known as the Hotel de Royaumont. This eccentric nobleman was pleased to make it the rendezvous of all the duellists in Paris, and every morning gentlemen who had contrived to pick quarrels over night met there to settle them. The Count received them hospitably, furnished them with the weapons of their choice, with a surgeon, and with a room to fight in, and afterwards entertained the survivors at a late breakfast. This genial mode of life was finally interrupted by a couple of inconsiderate ladies who succeeded in killing each other in the *salon*. The police thought that this was a little too much and obliged the Count to close his hospitable mansion.

ORGAN-CASES AND ORGANS.[1]



WHAT so little study should have been given to the subject of organ-cases by the architects and archæologists of the "Revival" is indeed strange. It is true that the elder Pugin designed very elegant organ-cases for Jesus Chapel, Cambridge, and Ushaw College, near Durham (the latter was never executed), and that several good cases have recently been erected from designs of the late Sir G. Scott, Mr. G. F. Bodley, A. R. A., Mr. Somers Clarke, and the Rev. F. H. Sutton; also that we have had publications upon the subject by Mr. Sutton and others; that papers have been read before the Architectural Association by Mr. Somers Clarke and Mr. H. H. Brewer, and a drawing of the splendid old organ-case in the Cathedral of Hertogenbosch (Bois-le-Duc), by the last-named gentleman, accompanied by remarks upon ancient cases existing in Holland and Germany, was published a few years back in the *Builder*; yet it may certainly be said that no single article of church furniture has received so little attention, and for this reason alone, if for no other, we gladly welcome such a work as that by Mr. Hill, just now published. But when we add that the book in question is carefully written, and illustrated by nearly forty photo-lithographs, folio size, reproduced from drawings made specially for the work by Mr. Hill himself, and that many of the organ-cases sketched have never before been illustrated, the great value of the book both to the professional architect and the archæologist can scarcely be over-rated. It is, in fact, the only "text-book" upon the subject yet published, and thus supplies a want which has long been felt by all who have had their attention called to this very important and necessary article of church furniture.

What at once strikes us in turning over the leaves of Mr. Hill's handsomely got-up volume is the extraordinary variety displayed in the ancient designs, the perfectly marvellous originality, and almost endless power of invention displayed by the Mediæval and Renaissance architects in their treatment of the organ-case. In fact, their remarkable versatility and power are nowhere more conspicuous, and what makes the matter somewhat remarkable is the fact that nearly all the existing examples date from a period which we are in the habit of regarding as marking the decline of art.

The earliest organ-case supposed to exist in any European church is to be seen at Sion, in Switzerland. Mr. Hill considers that it dates from the close of the fourteenth century. The instrument is small, only about twelve feet high and six feet wide; the pipes are arranged in two square "towers," and a gable situated between them. The "shades" are formed by compositions of rather elegant curvilinear tracery. The front of the organ is provided with shutters richly painted, the subjects depicted being Our Lord and St. Mary Magdalen on one side, and St. Catherine kneeling before the Virgin Mary and the Divine Infant on the other. The lower portion of the case is plain in construction, but painted with a kind of scroll pattern. It will be noticed that here, as in nearly all the organ-cases illustrated and described by Mr. Hill, the upper portion of the case is bracketed-out at the sides, over the lower portion or "trunk" of the organ. The next example in point of date is the Church of Alcala de Henares, in Spain. This is a rather larger and more elaborate case than that at Sion. The front is composed of a central tower and two "flats" filled with pipes, and crowned by three open-work spires. Like the Sion example, we have here also the shutters or doors, but no decoration is shown upon them. Unlike the Sion case, however, this is not bracketed over at the sides, so that the "trunk" and upper portion of the case are of the same width, and a comparison of the two designs will, we think, convince every one how much the Sion case gains by this treatment. The only other mediæval case illustrated by Mr. Hill which does not possess this bracketing-out is the grand case of the organ in Perpignan Cathedral. Now as Perpignan was formerly in Spain, and as these are the only two cases illustrated from that country, it seems probable to us that the absence of this very general feature is a peculiarity of Spanish organ-cases. Mr. Hill speaks highly of Spanish organ-cases, but we must confess that we like the two Spanish examples less than most others given in the book. The absence of the corbelling, or bracketing-over at the sides, gives the instrument a square, heavy, clumsy look.

The cases at Sion and Alcala both enclose very small instruments, but as the size and requirements of the organ demanded greater

[1] *The Organ-Cases and Organs of the Middle Ages and Renaissance.* By A. G. Hill, B. A., F. S. A. A book-review published in the *Builder*.

space, the mediæval architects were quite prepared to meet the demand upon their powers of invention, and we find towards the close of the fifteenth century the truly magnificent organ-cases of Dortmund and Strasbourg. The former is one of the most valuable examples given by Mr. Hill; it consists of three large semi-circular towers, separated by flats; the upper portion of the case very boldly corbelled-out at the sides; the pipe-shades are finely carved with pierced foliage, and the whole is crowned by lofty open crestings. The trunk is richly panelled and carved, and the whole is supported upon a surprisingly rich wooden gallery. The organ-case is thoroughly Gothic, but the gallery has a touch of Renaissance about it. Mr. Hill considers the two to be of about the same date, but we cannot help thinking that, although the projecting semi-hexagonal portion of the loft may be coeval with the organ-case, the two flat portions at the sides are some half-century later.

What makes the Dortmund case so interesting is the fact that it would exactly adapt itself to our present wants; it could, in fact, contain a moderately-sized organ, just such a one as would be required in an ordinary parochial church.

A few years later in date than the Dortmund case is the magnificent example in the Marienkirche at Lübeck, an immense instrument, eighty feet high and forty feet wide, enclosed in a case adorned with a profusion of splendid tracery, carving, and decoration, filling up the whole west end of the church. We often, now-a-days, hear architects complain that they have to accommodate large organs in their churches; yet in the year 1504 the old German architects or builders were not daunted at having to find room and to design a case for an instrument at least four times the size of those over which our present architects raise such difficulties. Mr. Hill very properly does not confine his descriptions and illustrations to Gothic organ-cases, but carries his subject down through the Renaissance period to the year 1740, the latest example in point of date being that from the Cathedral of Würzburg, in Bavaria. The numerous superb Renaissance examples given must justify the course pursued, even to the most exclusive admirers of Gothic architecture. Grander examples of church furniture than the great Renaissance organ-cases of the Cathedrals of Le Mans, St. Brieuc, and Hertogenbosch, or those from the churches of Argentan, Caudebec, St. Bertrand de Comminges, Augsburg, and Stralsund, could not be conceived, and it is certainly deeply to be regretted that either the opportunity or the ability to design such works appears to be now wanting. As Mr. Hill observes, nothing can be imagined more dismal and wretched, both in point of design and construction, than the general run of organ-cases erected in our churches and music-rooms. The author makes some remarks upon this subject which we will quote in his own words: —

"The present Gothic revival has practically done nothing towards promoting a more intimate knowledge of the true characteristics of these ancient works of art (organ-cases), for the modern Gothic case is nearly always the most miserable caricature of mediæval work; and as for Renaissance examples, they are almost invariably considered out of place in a Gothic church, and are thus never studied with a view to their being adopted as models for architects of the present day. . . . Many good organs were built in England during the seventeenth and eighteenth centuries, and good cases were made to enclose them, and yet it can scarcely be denied that at the present time the organ-case is one of the most miserable and inconsistent pieces of work that has resulted from the late revival of ecclesiastical art. It is very rarely that any attempt whatever is made to surround the instrument with wood-work of architectural importance, but when this is the case, complete failure is almost invariably the result, through want of knowledge, on the part of the architect, of the true principles which govern the beautiful designs exhibited by these ancient examples of wood-work."

Of course, as Mr. Hill points out, there are others who are still more to blame than architects, and these are those bodies called "organ committees," who, anxious to get all they possibly can for their money, simply accept the tender of that organ-builder "who can *give them the greatest number of stops.*" There are, however, numerous other reasons for the present very unsatisfactory state of things, to which we will allude, and the principal one is certainly the present practice of bundling away an organ into a dark hole at the side of the chancel, called an "organ-chamber!" As long as the organ was placed in the western gallery, the authorities knew that an organ-case was necessary and *must be paid for;* but directly the organ is hidden away in one of those abominations called the "organ-chamber," it is obvious that any ornamentation or carving is simply thrown away, and this has led by degrees to the absurd notion that "a church-organ ought not to have a case at all," and the present four-post-bedstead arrangement has come to be looked upon as something very "chaste" and "elegant," instead of being regarded, as it ought to be, as a mean, paltry makeshift; but so attached have some people become to this "four-poster" arrangement, that even when money is given for an organ-case, it is too often expended in sticking up angels on the top of the posts, a few wriggles of brass or iron work in between them, and painting the pipes in lollypop patterns. A most ridiculous superstition has seized people that it is *wrong to put a cornice or canopy over the top of the pipes of an organ!* And thus in nearly all new organs we see the tops of the pipes exposed, forming a most hideous outline, and giving the spectators the impression of an instrument in course of destruction. Now if there is one thing which the ancient designers insisted upon more than anything else, it is that the instrument should be crowned by a canopy or a cornice, and there is no single example of an ancient stationary organ where this feature is wanting. The exquisite Gothic organ-case at Jutfaas, in Holland (of which Mr. Hill gives a remarkably careful drawing), is crowned by a mass of magnificent canopy-work nearly double the height of the organ itself.

Although in some examples the tops of the pipes are visible, yet they always have a shade and cornice above them, so that the pipes never by any chance whatever form the outline of the top of the organ-case. The reason is evident. An organ-case is supposed to *enclose* an organ, and not to be a rack or stand for the pipes alone. It should be distinctly understood that the cornice or canopy above the pipes of an organ does not in any way injure the tone of the instrument, but on the contrary rather improves it, if properly arranged.

The fact must also not be overlooked when considering the difficulties of obtaining well-designed organ-cases, that organists and organ-builders both begrudge every farthing of money spent upon the outside of the instrument. We have often ourselves, when speaking about organ-cases, heard organists make some such exclamation as the following: "Oh, bother your crockets and cornices; give me a good open diapason on the great, or a fine reed on the pedal!" Of course this is all very narrow-minded, but we have all heard the expression "There's nothing like leather."

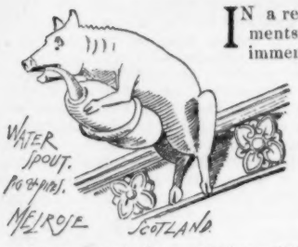
If we are ever again to have fine organ-cases, one of two things must take place — either we must return to the western organ-gallery and have the choir and organ in the old-fashioned position, or some other important situation must be found for the instrument. Mr. Statham has proposed a shallow transept, and Mr. Brewer would place the organ upon an open arch between the nave and chancel. Mr. Somers Clarke has placed the organ in St. Martin's, Brighton, in a gallery corbelled-out at the side of the chancel, and the arrangement well suits the church in question, but this could only be done in a very wide and spacious building. All those gentlemen who have given special attention to this question agree in denouncing and condemning the organ-chamber, yet we fear it will be years before we get rid of this most unfortunate feature of modern ecclesiastical architecture. Not only has the organ-chamber led to the abandonment of the organ-case, but it has become a most costly substitute for it. People are apt to say, "Yes, an organ-case is certainly a handsome piece of furniture, but then, you see, it costs a good deal of money." Now, it never seems to suggest itself to people who speak in this way, that an organ-chamber also costs a good deal of money. They seem to forget entirely that the walls, windows, arches and roof of an organ-chamber cannot be constructed for nothing; there can, in short, be no doubt whatever that the money now expended upon an organ-chamber would amply suffice for a very magnificent case.

Not only are we now neglecting the construction of organ-cases, but we are absolutely, according to Mr. Hill, destroying ancient ones. A remarkably fine fifteenth-century Gothic case, at Rhenan, near Utrecht, has only just been pulled down, and the noble Renaissance organ-case at St. Mary's, Dijon, is being taken away, and even in England numerous examples of excellent Renaissance work have been destroyed or removed within the last few years. This is the more to be regretted because this country is very poor in examples of old organ-cases. The solitary mediæval example which we possess is at New Radnor, in Wales, and there are only two or three Early Renaissance cases to be found. They exist at Tewkesbury Abbey and Framlingham Church, Suffolk. Mr. Hill illustrates the organ-case at Gloucester Cathedral, the choir-front of which dates from the year 1579, and is therefore one of the earliest examples remaining in England; also King's College, Cambridge, which dates from the year 1605, and Exeter Cathedral, 1665. The old organ at Hatfield House, which is contemporary with that of King's College, Cambridge, is mentioned by Mr. Hill, and one or two others which were in existence a few years back; but whether they have been improved or "restored" away is doubtful.

We may mention that Mr. Hill has given a list of the stops of several of the most celebrated organs, especially that of Harlem, and also an historical chapter, which is of considerable interest, though this portion of the work is kept down, as the subject has been treated at considerable length by Hopkins and Ranbault and other writers. The fact must not be overlooked that Mr. Hill comes before the public as a thoroughly practical writer, who is able to speak from personal experience, as he is one of the representatives of the oldest firm of organ-builders in this country. Hitherto when artists or archæologists have advocated the external adornment of the organ, and placing the noble instrument in a conspicuous position, they have been looked upon as dreamers — as men without practical experience, who would sacrifice the inside of the instrument to mere external embellishment; but here is an organ-builder of vast experience, a member of a firm which has supplied our churches and chapels with organs for nearly two centuries, strongly advocating the most minute attention being given to the designing of the organ-case. Surely this ought to convince "practical people" that, even from their own practical point of view, the matter deserves attention. Artists will scarcely need such an argument to convince them that the exterior of a musical instrument ought to be made beautiful; and when we mention the fact that there are organ-cases in existence which are adorned with decorative paintings from the hands of Paolo Veronese, Carlo Urbino, the Holbeins,

Burgkmeyer, and Zeitbloom, we have said enough to show that no artist ought to consider it beneath his dignity to paint the outside of an organ. — *The Builder.*

THE HIGH BUILDING PERIL.



IN a recent issue we made some comments on the fact that the number of immensely tall buildings was rapidly increasing in the large cities. After saying that the "commercial necessities of the country demand large and high buildings," the article continued as follows: —

Science must be called upon to provide the required fire protection, and this will come mainly through a better class of buildings made more nearly fire-proof than existing buildings are. It will not be long before business blocks ten, twelve and even fifteen stories high will be the rule in large cities rather than the exception, and those who now think it would be wise to restrict their height will find it more profitable to turn their attention to devising methods for making such structures safe. The introduction of elevators has made the upper floors more desirable for office purposes than the lower ones, and tenants will occupy them with little regard to the hazard they run in so doing. Our fire authorities are doing all in their power to increase the capacity of fire-extinguishing apparatus, but there is a limit beyond which even steam-engines cannot pass. To make these tall buildings comparatively safe, the law should compel them to carry their own fire protection as permanent fixtures.

The *Investigator* takes us to task for thus recognizing the inevitable and says: "If the construction of blocks of buildings 'ten, twelve and even fifteen stories high is to be the rule in large cities' and to receive encouragement from firemen's and insurance journals, then insurance companies may as well prepare at once either to withdraw from these cities or double the rates of premium." If our critic will read again what we wrote, he will see that we took the same view of the question, for we distinctly said that what remained for the insurance companies to do was to "charge for the risk as they find it." If the height of a building warrants the doubling of the rate, then the rate should be doubled. Our contemporary approves the position taken recently by the Chicago underwriters, who petitioned the City Council to restrict the height of all buildings to eighty-five feet. This is simply "kicking against the pricks," for such a restriction would be opposed to public sentiment and to public interests. Some of our underwriters can remember when they protested against four and five story buildings in this city, and endeavored to prevent their erection by charging an extra rate for height, but their efforts to arrest the demands of commerce were as ineffectual as was the Pope's Bull against the comet. Instead of four and five story structures, seven, eight and nine stories are the rule, while there are many buildings in this city that are from ten to twelve stories high. With increased height of buildings there has come an extension of their areas, so that a space that would have formerly sufficed for half a dozen buildings is all under one roof. Herein lies a greater danger than from extraordinary height, for if a fire gets well started in such a building, it makes a mass of flame and heat that is unapproachable and can only be fought at long range. A noted dry-goods store on Broadway is a fair illustration of this. A few weeks since Chief Bates and some underwriters and merchants were looking over the risks in the dry-goods district, and the Chief was asked what would be the result of a fire in this building. His laconic answer was: "A conflagration." The building covers nearly a block of ground, and there is not a fire-wall in it — it is one immense store, filled with combustible materials. Should a fire take in one part it would spread rapidly through the entire space, and the heat would be so intense that the firemen could not approach it. They would have a terrible fight on their hands and where the "conflagration" would be stopped no one could predict. If three or four fire-walls divided this immense area, the firemen would be able to utilize one part to combat a fire raging in another. As ocean-going ships are now divided into compartments so that one of them may be filled with water and the vessel still float, so should our large buildings be divided into compartments by fire-walls, so that a fire may rage in one without destroying the others. But where immense undivided areas are combined with extraordinary height the hazard is greatly increased, and such a building becomes a standing menace to the safety of that portion of the city surrounding it.

Recognizing the fact, however, that commercial necessities demand large and tall buildings, we have urged underwriters to require them to be built with some regard to safety. Such buildings must be insured, and if the underwriters act in concert, they can compel owners to adopt such measures to secure safety as will reduce the hazard to the minimum. It is claimed for the famous Welles Building, in Exchange Place, which is ten stories high, that it is fire-proof, and such confidence has the owner in its fire-resisting qualities that it is insured to a very small amount. This building cost $2,500,000, and there must be great confidence where such an amount is left at risk almost without insurance. While the interior has some wood-finish about it, there is not enough, it is claimed, to injure the walls, if it should all burn. It certainly has the appearance, inside and outside, of being remarkably well built, and possessing but a slight fire hazard. If all our tall buildings were as well built, their extra height would not add much to the city's peril. Our contemporary ridicules the idea that permanent attachments to such buildings for fire protection afford any security, for the reason that there is not sufficient water pressure in any city to force water to their roofs. Let us ask what large city relies upon its water pressure for fire extinguishment? According to our information, they all have steam fire-engines that throw the streams, and the firemen have a habit of uniting the power of several engines to throw one stream when heavy pressures are required. If the Welles Building, whose brick-paved roof is one hundred and forty-five feet above the curb, is equipped with the latest improved stand-pipes, to which the engines can be connected, there will be little difficulty in getting a stream of water up there through the medium of steam fire-engines. From this point the firemen could obtain command of fires burning the adjacent buildings below them, in addition to protecting the building itself. Automatic sprinklers have been found of exceeding value in the large mills of New England, and they might well be introduced into the high buildings of our cities. By placing a reservoir on the roof to supply them with water, making all floors water-tight so as to avoid excessive water damage, and connecting the sprinklers with an automatic fire-alarm, they would certainly prove valuable appliances for extinguishing fires. But if tall buildings are to be erected — and we conceive that they will be — it is essential to their safety and the safety of their surroundings, that they be amply provided with fire-extinguishing appliances as permanent fixtures, only such being recognized by the underwriters as have the approval of the officers of the fire department. Recently the Board of Underwriters voted to allow a rebate of five per cent on all buildings equipped with the Benner stand-pipe and ladder combined. This is an appliance that meets the approval of the fire-department officials, while the stand-pipes ordinarily erected are scorned and derided as useless encumbrances, that the firemen never attempt to use. It is common for owners of buildings to be content with anything in the nature of fire-extinguishing appliances that will satisfy the underwriters and keep their rate down. They should instead be required to satisfy the practical officers of the fire-department, and when these have certified to the value of an appliance for fire extinguishment it will be time for the underwriters to make reductions of rates in consequence of their adoption. As the firemen are the ones to use all extinguishing apparatus, they are the ones to pass judgment upon them.

We are well aware that it is impossible to erect an absolutely fire-proof building, but buildings can be so constructed as to offer a great amount of resistance to the progress of a fire, and can be so equipped with fire-extinguishing appliances that the fire hazard in a high building will be less than it now is in the average business buildings of our large cities. We are not in favor of high buildings, but we may as well accept the inevitable and prepare for it. The limit of aerial construction has not yet been reached, and it is well to consider how these tall buildings of the future are to be made as little perilous as possible. As they rise above the capacity of the machinery of the fire departments to reach, it follows that they must carry their own fire-extinguishing appliances. As we remarked before, "science must be called upon to provide the required fire protection, and this will come mainly through a better class of buildings, made more nearly fire-proof than existing buildings are." Underwriters can exercise a potent influence in securing better construction if they will in every instance enforce their own motto, and "charge for the risk as they find it." Property-owners would soon find that there is a profit in slow-burning construction, and in so equipping their buildings with fire-extinguishing appliances as to reduce the fire hazard to the minimum. — *The Fireman's Journal.*

AN OPENING FOR SKILLED LABOR.

MARTINSVILLE, HENRY CO., VA.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Sirs, — This is a growing, pushing village of a thousand people. It is the county seat of one of the wealthiest counties in Virginia. There are building enterprises of various sorts in progress, and altogether it is one of the finest openings for skilled labor within my knowledge. This county has a population of 17,000, and is small in area. Out of this number of people there is but one really first-class brick-mason; but one plasterer, who is master of his trade; not one blacksmith who could earn a living at his trade, in competition with what would be known as a skilled blacksmith in the North.

This absence of labor of this kind may be accounted for by the fact that until two years ago the county seat was *forty miles* from a railroad station, but within that time a narrow-gauge road has been built through the county, and the people are awakening to their needs and opportunities. At this place, within six months, quite a number of brick and wooden buildings have been erected, and $75,000 will have been invested that way this year; all this for a village, which, according to the census, had 290 people in June, 1880.

Whilst enterprises of various sorts are on foot, and many to be pushed forward during the season, there is not a *draughtsman* in this county, or its only village. It is not my purpose to worry the patience of the readers of the *American Architect*, but to do what I can toward attracting to the South, and particularly to this Virginia county, some of the surplus skilled labor of the populous North. L. S. T.

VENTILATING FIREPLACES.

Richmond, Va., May 7, 1883.

To the Editors of the American Architect: —

Dear Sirs, — Please inform me whether there are any parties in this country who are manufacturing Captain D. Galton's Patent Ventilating Fireplaces, or similar ones answering the same purpose.

Yours respectfully, Albert Lybrock.

[We do not know that the Galton fireplace is manufactured in this country. Fireplaces based on similar principles are made by E. A. Jackson & Brother, 77 Beekman Street, New York; the Open Stove Ventilating Co., 78 Beekman Street, New York; and the Dimmock Heater Co , Cincinnati, O. For full information on the subject, we refer our correspondent to Mr. Putnam's book, *The Open Fireplace in All Ages*, published by James R. Osgood & Co., Boston, Mass.— Eds. American Architect.]

LIME-KILNS.

New York, May 14, 1883.

To the Editors of the American Architect: —

Dear Sirs,—We would refer your lime-kiln correspondent (*American Architect*, p. 227,) to the article "Lime," in Appleton's *Dictionary of Machines, Mechanics, Engine-Work and Engineering*, where dimensions and product are given. Would suggest an examination of the Index to *Scientific American Supplements*, and special examination as to the rock to be used, as to dimensions of local kilns, etc.

X. G. X.

Syracuse, May 14, 1883.

To the Editors of the American Architect: —

Dear Sirs, — To "Subscriber" who asks for a book on lime-kilns, I would recommend "*Mahan's Civil Engineering*," published by Wiley & Sons, New York. This book contains many suggestions of value in regard to lime and its manufacture, and gives cuts and descriptions of different varieties of kilns.

Yours truly, E. M. Buell.

NOTES AND CLIPPINGS.

Large Anvil-Blocks for Steel Works.— Owing to the rapid and very extensive growth of the manufacture of Siemens steel in Scotland, there has been a somewhat extraordinary demand for large anvil-blocks north of the Tweed within the past few years, and during the past week two, of immense size, have been cast. Up till now there has not been any anvil-block in Scotland weighing more than 140 tons, but on Saturday of last week one was cast at the Dalziel Steel Works, Motherwell (Messrs. Colvill's), which is said to contain 170 tons of metal, and there is in progress at the steel works of the Govan Forge and Steel Company, Glasgow, an anvil-block which is estimated eventually to contain about 165 tons of metal. In both cases these anvil-blocks are intended for use with 12-ton steam-hammers, of which there are already several in regular work in Scotland. The Govan anvil-block will be in two pieces, the larger of which, weighing about 140 tons, was cast last Saturday, in the presence of a large number of representatives of the engineering and allied branches of industry. It was cast in a mould occupying the position which the block will eventually occupy after it has been slowly cooled, and has been canted over upon its proper base. The other portion, which will form the top piece or swage block, and will weigh about 25 tons, will be cast within the next few days. The mixture used in the anvil-blocks under consideration was about one-fourth No. 3 Gartsherrie pig-iron and three-fourths scrap cast-iron, two of Ireland's patent cupola furnaces, each capable of melting six tons of metal per hour, being used in the operation and the blast being obtained from a No. 7 Root's blower. The manufacture of this anvil-block is entrusted to Mr. William Ireland, of Manchester, who, during the last fifteen or twenty years, has had a most extensive and peculiar experience in connection with the casting of such blocks, both in this country and in Germany; indeed, in the last-named country he has superintended the construction of somewhere about thirty, of which no fewer than thirteen, of a total of 2000 tons, were made for the Union Company, of Dortmund, five of them being blocks of 175 tons each. For the Osnabrück Steel and Iron Company Mr. Ireland made three blocks, one of which weighed 250 tons, which, like the Govan and Motherwell blocks, was intended for use with a 12-ton hammer.— *Engineering.*

Condition of the "Monuments" of Cairo.— Mr. Stanley Lane Poole writes from Cairo to the *Athenæum* about the commission appointed to preserve the monuments of the city. He found the committee scrupulously alive to the smallest indication of artistic or historical value in the most inconsiderable monuments. Of seven monuments examined on the 24th of February only one was condemned, a small mosque, whose walls had nearly fallen, and whose interior was a heap of ruins. It was decided to search the ruins for any pieces of ornament or mosaic, and place them in the museum, recording in the archives the site and name of the mosque. One monument had beautiful stucco tracery fast falling to pieces; it was decided to have it photographed at once. One danger to monuments in Cairo is the commission called *Tanzûn*, which widens and straightens the streets. Beautiful private houses and mosques have fallen victims to this Europeanization of Cairo. It appears that room is wanted for carriages, and thus the most picturesque quarters of the city are losing their beauty. A museum of Arab art is to be founded in the Mosque El-Hakûn, and already contains eighty-four glass mosque lamps, fifty of which have inscriptions, blazons, and enamel, and belong to the Mameluke period, besides many other things, such as bronze doors, panel-work, inlaid silver tables and nuhrâbs, or niches, covered with arabesques and inscriptions.

The Mill-Chimney Accident at Bradford, England. — The inquiry at Bradford concerning the fall of the chimney of the Newlands Mills was concluded on Wednesday. After a consultation of two hours the following verdict was returned by the coroner's jury: — "We find that the owners of the property at Newland Mills did all that unpractical men could reasonably be expected to do under the circumstances; therefore we do not attach any blame to them, or find them guilty of negligence; and we give our verdict — 'Accidental death.' We are of opinion that the foundation was good and the fall of the chimney was partly due to cutting, aided by the strong wind on the morning of the accident, and regret the works were not stopped during the repairs." No other verdict, we suppose, was possible. In manufacturing towns there is much faith in the genius of chimney straighteners, and the jury were likely to possess that faith. It was plain from the evidence that the late owner of the mill did not consider himself to be an unpractical man; on the contrary, he was esteemed by the people in his service as an authority on construction. He overruled the opinions of builders and architects, and the consequences of his despotic interference are now apparent. It was with difficulty that his representatives could be persuaded that there was any risk attending a work which he directed. The catastrophe is a terrible example of the danger which may arise when a man is his own architect. — *The Architect.*

The Cost of Public Buildings. — A statement prepared at the Treasury Department shows the amounts appropriated and expended by the national Government for public buildings in the States and Territories from March 4, 1789, to June 30, 1882. The total amount appropriated has been $88,462,262, and the amount expended has been $83,404,221, distributed as follows:

New York	$14,314,656.88	Georgia	$498,648.21
Massachusetts	7,670,923.96	North Carolina	454,005.63
Pennsylvania	7,482,469.42	West Virginia	384,303.60
Illinois	7,463,936.98	Rhode Island	326,463.23
Missouri	6,134,068.63	Arkansas	306,745.79
Ohio	5,796,968.77	Texas	299,722.30
Louisiana	4,972,368.58	Vermont	252,276.38
South Carolina	3,386,883.90	Kansas	205,834.63
California	2,115,622.67	New Hampshire	173,670.96
Maine	2,080,137.40	Florida	156,220.95
Maryland	1,864,602.80	Mississippi	138,275.16
Tennessee	1,129,044.18	Delaware	102,924.97
Connecticut	1,074,925.43	New-Mexico Territory	97,824.86
Virginia	847,442.61	Utah Territory	64,998.90
Kentucky	793,029.61	Washington Territory	61,753.83
Michigan	781,673.41	Montana Territory	48,772.75
Indiana	779,057.66	Colorado	44,154.84
New Jersey	685,744.11	Idaho Territory	41,738.15
Nebraska	624,607.05	Wyoming Territory	40,109.22
Wisconsin	601,723.74	Alaska Territory	5,989.31
Oregon	565,983.30	Dakota Territory	533.45
Minnesota	531,602.72	Miscellaneous repairs, etc.	6,947,868.51
Alabama	527,896.03		
Iowa	526,416.07	Total	$83,404,221.54

This statement does not include the cost of the Mint buildings or the cost of any of the public buildings in the District of Columbia.

Iron Cements — The *Technische Commerz Zeitung* gives the following recipes for cements for iron:—

Cement which resists Heat and Water. — Lime, 10 parts; iron filings, 5; vinegar, 2; water, 3.

Black Iron Cements for Iron Ovens. — Iron filings, 10 parts; sand, 12; bone-black, 10; slaked lime, 12; lime milk, 5.

Cement for objects which have to be heated. — Iron filings, 100 parts; clay, 50; common salt, 10; quartz sand, 20.

Cement for fastening Iron to Stone. — Fine iron filings, 10 parts; plaster of Paris, 30; sal-ammoniac, 1. These are mixed to a fluid paste with weak vinegar, and used at once.

Cement for Iron Cisterns. — Finest iron filings are mixed with vinegar into a paste, which is left to stand until it becomes brown; the mass is then pressed into the joints.

Fire-proof Cement for Iron Pipes. — Wrought-iron filings, 45 parts; clay, 20; china clay, 15; common salt solution, 8. If china-clay cannot be found, fire-clay will serve the purpose instead.

Ammonia Iron Cement. — Iron filings, 100 parts; sal-ammoniac, 2; water, 10. This cement begins to rust after some days, and becomes very strong, and is proof against water and steam.

Cement for Annealing-Boxes. — Iron filings, 100 parts; lime milk, 40; quartz sand, 50; vinegar, 20. These are worked with water into a paste, to which may be added, to render the mass more porous, hair, sawdust, etc.

Iron Cement for hermetically closing Stove-Doors. — Finest iron filings, 100 parts; sal-ammoniac, 10; limestone, 10; soluble glass solution, 10. These are mixed with water to a thick paste, which is applied at once, and is left to dry slowly before heating.

Cement for broken Iron Vessels. — Iron filings, 10 parts; clay 60. These are worked with linseed oil into a thick paste, which is applied after some more linseed oil has been added to it, and left to dry slowly.

Rust Cement for Iron. — Wrought-iron filings, 65 parts; sal-ammoniac, 2½; sulphur (flowers) 1½; sulphuric acid, 1. The solid ingredients are mixed dry, sulphuric acid diluted with sufficient water being then added. This cement dries after two or three days, and unites with iron, making a very resisting and solid mass.

Cement for filling Faults in Castings. — Iron filings, free from rust, 10 parts; sulphur, ½; sal-ammoniac, 0.8. These are mixed with water to a thick paste, which is rammed into the "faults." This becomes strong when the iron-filings are rusted. The parts which have to be cemented are treated before the operation with liquid ammonia, so as to be perfectly free from grease.

Fire-proof Cement. — (1) Iron-filings, 140 parts; hydraulic lime, 25; quartz sand, 25; sal-ammoniac, 3. These are formed into a paste with vinegar, and then applied. This cement is left to dry slowly before heating. (2) Iron filings, 180 parts; lime, 45; common salt, 8. These are worked into a paste with strong vinegar. The cement must be perfectly dry before being heated. By heating it becomes stone hard. — *Engineering News.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

SUMMARY OF THE WEEK.

Baltimore.

BANK-BUILDING. — Chas. L. Carson, architect, has prepared drawings for a five-st'y bank-building to be erected cor. Sharp and Lombard Sts., to be designated the People's Bank. It will be of brick, with stone and terra-cotta finish, 27′ 6″ x 130′; cost, $40,000; J. Holland, superintendent.

WAREHOUSES. — George Archer, architect, has prepared drawings for the Trustees of the Samuel Ready Asylum for Female Orphans, for 4 four-st'y warehouses on Camden St., near Howard St., brick, with stone finish, 21′ 6″ x 80′; cost, $30,000; Messrs. Hopkins & Marshall, builders.

BUILDING PERMITS. — Since our last report thirty-one permits have been granted, the more important of which are the following: —

Trustees of Samuel Ready Asylum for Female Orphans, 4 four-st'y brick warehouses, n s Camden St., between Howard and Sharp Sts.

W. H. Bynion, 2 three-st'y brick buildings, w s Chester St., s of Hampstead St.

R. E. Diffenderfer, 10 three-st'y brick buildings, e s Park Ave., n of Wilson St.

Mary C. Irvine, 7 three-st'y brick buildings, e s Mount St., between Lexington and Fayette Sts.; and 6 two-st'y brick buildings, w s Vincent Alley, between Baltimore and Fayette Sts.

Geo. H. Klark, 2 three-st'y brick buildings, w s High St., between Fayette and Low Sts.

Anne G. Hellwing, three-st'y brick building, s s Eastern Ave., w of Ann St.

Monroe-street M. E. Church, three-st'y brick parsonage, s w cor. Monroe and Ramsay Sts.

Michael Ryan, 2 three-st'y brick buildings, s s McMechin St., between Pennsylvania Ave. and Division St.

Frederick Blank, 2 three-st'y brick buildings, w s Dorsey Alley, between West and Clements Sts.

C. H. Callis, 6 two-st'y brick buildings, s s Hoffman St., between Ensor St. and Holbrook Alley.

Sheep Butcher's and Wool-Pulling Association No. 2, 7 two-st'y brick buildings, s s Robert St., between Division and Boulder Sts.; and three-st'y brick building, s w cor. Division and Robert Sts.

First United Brethren Church, 4 two-st'y brick buildings, s s Perry St., between Hanover and Sharp Sts.

St. Elizabeth Home, three-st'y brick building in rear of No. 57½, e s St. Paul St., between Saratoga and Pleasant Sts.

Jacob Saum, 12 three-st'y brick buildings, n s Hollins St., between Stricker and Gilmor Sts.

Boston.

BUILDING PERMITS. — *Brick.* — *Beverly St., Nos.* 93–99, Ward 7, for J. C. & E. S. Converse, stores, 40′ 10″ x 84′ 6″, five-st'y flat.

Medford St., Nos. 66–76, Ward 7, for Boston Rubber Shoe Co., warehouse, 84′ x 155′, five-st'y flat.

Commonwealth Ave., No. 180, Ward 11, for Wm. S. Rand, dwell., 26′ x 67′, three-st'y mansard; Wm. S. Rand, builder.

K St., No. 202, Ward 14, for Edward S. Winchester and Isaac Hayden, cover to boiler and engine, 10′ x 20′, one-st'y pitch.

South St., Nos. 128–136, Ward 12, for Frank M. and Albert G. Frost, mercantile, 60′ and 68′ x 77′, five-st'y flat; M. S. & G. N. Miller, builders.

Norfolk Pl., No. 6, Ward 12, for Samuel S. Campbell, mercantile, 31′ x 35′ 7″, six-st'y flat; E. Whitmore, builder.

Warren St., cor. Rockland St., Ward 21, for Geo. Hinman, dwell., 24′ x 50′; A. D. Gould, builder.

Warren St., cor. Rockland St., Ward 21, for Chas. F. Worthington, dwell., 24′ x 50′; A. D. Gould, builder.

Wood. — *Tremont St.*, near Whitney Pl., Ward 22, for Patrick Daley, dwell., 22′ 6″ x 49′ 6″, three-st'y flat; James Donnelly, builder.

Dove St., Nos. 24–28, Ward 14, for Thomas P. Frost, stable, 30′ x 60′, two-st'y flat; Laming & Drisko, builders.

Blue Hill Ave., Nos. 40–44, Ward 20, for Leander B. Abbott, 3 dwells., 23′ x 51′, three-st'y flat; Leander B. Abbott, builder.

Sumner St., Nos. 387 *and* 389, Ward 2, for Eliza Moore, 2 dwells., 17′ x 25′ and 17′ x 30′, two-st'y pitch; Herman Drake, builder.

Gilbert St., near Hoffman St., Ward 23, for Miss Anna M. Hall, dwell., 22′ 6″ x 30′ 6″, and 16′ x 18′, two-st'y pitch; Robert D. Ward, builder.

Story Pl., off Greenough Ave., Ward 23, for Edward Sherwin, dwell., 32′ 4″ x 51′, two-st'y pitch; Wm. H. Stewart.

Roslin Ave., nearly opposite Albano St., Ward 23, for Emil Frykland, dwell., 22′ and 28′ x 36′, two-st'y pitch; Alexander Rogers, builder.

Hyde Park Ave., e of Richards Ave., Ward 23, for A. K. Cortland, dwell., 21′ x 26′, two-st'y pitch; Melvin D. Ayers, builder.

West First St., No. 147, Ward 13, for Joseph W. Clark, et als., mechanical, 28′ x 30′, one-st'y flat; James Hopkins, builder.

Randlett Pl., near Rand St., Ward 20, for Albert Ward, dwell., 22′ and 25′ x 30′, and 15′ x 18′, two-st'y pitch; Decker Bros., builders.

East Seventh St., No. 538, Ward 14, for Phillips Church Society, church, Congregational, 30′ x 85′, two-st'y flat; Holbrook & Harlow, builders.

Pratt St., near Linden St., Ward 25, for John Keegen, Jr., dwell., 20′ x 30′, two-st'y pitch; Samuel Beal, builder.

Union Ave., Ward 23, for B. F. Sturtevant, storage, 20′ x 75′ and 10′ x 75′, two-st'y flat; Samuel Case, builder.

Bellevue Ave., near Dudley Ave., Ward 23, for Edward Callahan, owner and builder, dwell., 20′ x 28′, two-st'y pitch.

M St., cor. East Fourth St., Ward 14, for Mrs. Fannie E. Stetson, dwell., 21′ x 30′, two-st'y pitch; D. A. Berry, builder.

Dorchester Ave., No. 579, Ward 15, for Christopher Burr, mercantile, 26′ x 35′, two-st'y pitch; Isaac H. Dunn, builder.

Boutwell Ave., cor. Train St., Ward 24, for Laban Pratt, stable, 37′ 3″ x 48′ 8″, one-st'y pitch; Samuel Davenport, builder.

Greenville St., No. 27, Ward 21, for Wm. Barton, owner and builder, dwell., 39′ x 40′, two-st'y pitch.

Nelson St., rear Norfolk St., Ward 24, for John F. Brown, dwell., 16′ x 36′ and 13′ 6″ x 24′, two-st'y pitch; John F. Brown, builder.

Wood St., Nos. 12 *and* 14, Ward 5, for Francis B. Austin; 2 dwells., 23′ 6″ x 31′ and 13′ x 32′, three-st'y flat; Edward W. Archer, builder.

George St., No. 81, cor. *Magazine St., No.* 31, Ward 20, for M. Kaiser, dwell. and store, 34′ and 39′ x 43′, three-st'y flat; Geo. F. Penney, builder.

Brooklyn.

BUILDING PERMITS. — *Vernon Ave.*, n s, 125′ w Sumner Ave., 5 two-st'y brick dwells., tin roofs; cost, each, about $4,000; owner, Jno. Loughi, 697 Willoughby Ave.; builder, S. C. Phillips.

Union St., n s, 253′ w Seventh Ave., 2 four-st'y brownstone front tenements, gravel roofs; cost, each, $6,000; owner, G. W. Brown, 728 Fulton St.; builder, L. E. Brown.

Elm St., e s, 50′ n Myrtle Ave., three-st'y frame store and double tenement, tin roof; cost, $4,000; owner, Michael Hoag, Forrest St.; builders, W. Bayer and P. Scheu.

President St., s s, 282′ 2″ e Smith St., 4 three-st'y brownstone front dwells., gravel roofs; cost, total, $24,000; owner, Chester Bedell, 337 Smith St.; architect and carpenter, Theodore Pearson; mason, Walter Smith.

Thirteenth St., n s, 100′ e Fifth Ave., 5 two-st'y brick dwells., tin roofs; cost, each, $2,500; owner, Daniel Doody, 605 Fifth Ave.; architect, C. B. Sheldon.

Eighth Ave., n e cor, President St., 4 four-st'y brownstone front dwells., tin roofs; cost, each, $20,000; owner and builder, Wm. Gubbins, 20 Seventh Ave.; architect, C. Werner.

Jefferson St., s s, 150′ e Marcy Ave., 3 three-st'y brick dwells., tin roofs; cost, each, $7,500; owner and builder, Geo. H. Stone, 301 Jefferson St.; architect, G. A. Schellinger.

North Eleventh St., two-st'y brick storage-building, gravel roof; cost, $13,000; owner, Pratt M'f'g Co., foot of North Twelfth St.; architect, F. Le R. Sweet; builders, J. Rooney and Jenkins & Gillies.

Broadway, s w cor. Park Ave., three-st'y brick store and tenement, tin roof; cost, $12,000; owner, Otto Wagner, 178 Floyd St.; architect, T. Engelhardt; builders, G. Lehrian & Son.

Magnolia St., s e s, 33′ 11″ s w Myrtle Ave., three-st'y frame store and tenement, tin roof; cost, $5,000; owner, Mrs. Gillespie, 47 South Fourth St.; architects, Duckworth & Co.; builder, J. Fallon.

Furnam St., s e cor Middagh St., 3 four-st'y brick factory buildings, tin or gravel roofs; cost, about $8,000 each; owner, Cornelius Donnellon, Pacific St., near Henry St.; architect, G. P. Chappell.

Leonard St., No. 581, w s, 225′ n Nassau Ave., three-st'y frame tenement, gravel roof; cost, $3,500; owner, Jno. Affleck; architect, William Shapter; builder, not selected.

Dean St., s s, 200′ e Washington Ave., 2 three-st'y brick double tenements, tin roofs; cost, each, $5,000; owner, Thos. Monahan; architect, I. D. Reynolds; builder, T. Donnelly.

Reid Ave., w s, 24′ n Quincy St., 8 two-st'y and basement brownstone front dwells., gravel roofs; cost, each, $4,800; owner, H. Battermann, 111 Reid Ave.; architect, A. W. Dickie; builders, —— Burroughs and C. L. Johnson.

Reid Ave., n w cor. Quincy St., three-st'y and basement brownstone front dwell., gravel roof; cost, $7,000; owner, etc., same as last.

Fifth St., n s, 212′ e Fifth Ave., 4 two-st'y brownstone front dwells., composition roofing; cost, each, $5,000; owner and builder, P. Mullady, 576 Quincy St.; architects, Parfitt Bros.

Jefferson St., s s, 125′ e Central Ave., three-st'y frame double tenement, tin roof; cost, $4,000; owner, H. Asmus, Jefferson St., cor. Central Ave.; architect, T. Engelhardt; builders, E. Loerch and J. Rueger.

Central Ave., w s, 75′ n Jefferson St., three-st'y frame double tenement, tin roof; cost, $4,400; owner, Ferdinand Gessner, 175 Hopkins St.; builders, W. Reeath and H. Eich & Co.

Judge St., e s, 133′ n of Powers St., four-st'y frame double tenement, tin roof; cost, $5,800; owner, Gabriel Gengler, 276 Powers St.; architect, G. Hillenbrand; builders, W. Bayer and C. Weiber.

Linden St., n s, 109′ w St. Nicholas Ave., one-st'y frame church; cost, $8,000; owner, Rev. Jno. McCloskey, St. Nicholas Ave. and Magnolia St.; architect, T. F. Houghton.

Rutledge St., n s, 222′ 6″ e of Marcy Ave., 2 two-st'y brownstone front dwells., tin roofs; cost, total $14,000; owner, John N. Sunderland, 39 Ross St.; architect, J. Rose.

Magnolia St., s e s, 50′ w of Myrtle Ave., three-st'y frame double tenement, tin roof; cost, $4,500; owner, Jacob Leich, Johnson Ave.; architect, G. Hillenbrand; builders, E. Loerch and J. Triesse.

Scholes St., s w cor. Ewen St., four-st'y frame tenement, tin roof; cost, $7,500; owner, Jacob Stadtmuller, Ewen St., near Meserole St.; architect, J. Platte; builders, J. Rauth and D. Kreuder.

Evergreen Ave., s w cor. Troutman St., three-st'y frame tenement, tin roof; cost, $4,500; owner and builder, Clemence Dehler, 139 Evergreen Ave.; architect, J. Platte.

Marcy Ave., e s, 20′ s Monroe St., 8 three-st'y brownstone front dwells., flat tin roof, with mansard on front; cost, about $6,000 each; owner, architect and builder, F. C. Vrooman, 444 Gates Ave.; mason, J. Softy.

Olive St., w s, 55′ n of Powers St., three-st'y frame double tenement, tin roof; cost, $4,400; owner, Friederich Spect, on premises; architect, G. Hillenbrand; builder, J. Rauth.

Bushwick Ave., e s, 51′ n of Maujer St., three-st'y frame double tenement, tin roof; cost, $4,000; owner, Mrs. M. Grammech, 145 Skillman Ave.; architect, J. Platte; builder, F. J. Berlenbach.

Johnson Ave., s w cor. Leonard St., four-sty brick tenement, tin roof; cost, $10,000; owner, Joseph Simon, Willoughby Ave., cor. Lewis Ave.; architect, J. Platte; builders, J. Rauth and D. Kreuder.

Baltic St., s s, 275′ e Smith St., 6 four-st'y brick double flats, gravel roofs; cost, each $10,000; owner and builder, Jas. W. Dearing, 434 Henry St.; architects, Parfitt Brothers.

Flushing Ave., s s, 25′ w of Hamburg Ave., 2 two-st'y frame double tenements, tin roofs; cost, each, $3,000; owner and builder, Geo. Loffler, 82 Thompkins Ave.; architect, T. Engelhardt.

ALTERATIONS. — *Manhattan Ave., No.* 437, two-st'y frame extension, tin roof, interior alterations; cost, $5,000; owner, Geo. Bullwinkle, Ash St., cor. Manhattan Ave.; architect, F. Webber; builders, M. Vogle and H. Eggers.

Broadway, s w cor. First St., three-st'y brick extension, tin roof, etc.; cost, $12,000; owners, First National Bank; builders, W. & T. Lamb and Jenkins & Gillies.

Bedford Ave., n e cor. Russ St., three-st'y brick extension; cost, $3,500; owner, Thos. S. Cooper, on premises; architect, E. T. Gaylor; builders, T. Gibbins and Jenkins & Gillies.

Chicago.

FLATS. — George Spohr has plans ready for 2 three-st'y and basement flats, 42′ x 60′, to be built on West Van Buren St., near Campbell Ave., for Charles Lee, to cost $15,000.

FACTORY. — Three-st'y factory, 75′ x 75′, is to be built for Gunglich & Brachvogel, on Kinzie St., near Ashland Ave.: Mr. George Spohr, architect.

BUILDING PERMITS. — J. Roeder, two-st'y brick flats, 21′ x 56′, 392 Webster St.; cost, $5,000.

Ole Johnson, three-st'y brick flats, 23′ x 72′, 81 West Huron St.; cost, $4,400.

W. B. Ogden's Estate, 4 two-st'y basement and attic brick dwells., 73′ x 96′, 380–386 Ontario St.; cost, $13,000.

Thos. Mahoney, two-st'y brick dwell., 22′ x 40′, 3807 Dearborn St.; cost, $3,000.

F. Hardt, two-st'y brick dwell., 25′ x 76′, 3830 State St.; cost, $5,700.

F. Mohan, two-st'y brick dwell., 22′ x 54′, 104 Polk St.; cost, $3,700.

Reynolds & Dale, three-st'y and basement brick store and dwell., 62′ x 74′, 2719–2723 State St.; cost, $24,000.

G. W. Stanford, 2 two-st'y basement brick dwells., 50′ x 50′, 416–418 Jackson St.; cost, $9,000.

N. Long, three-st'y brick store and flats, 65′ x 72′, 2628–2634 State St.; cost, $15,000.

Fred. Crumbaugh, three-st'y basement brick flats, 58′ x 150′, n e cor. College Place and Rhodes Ave.; cost, $75,000.

J. L. Hoesber, two-st'y basement brick dwell., 26′ x 55′, 900 Ashland Ave.; cost, $9,000.

A. Silhanek, three-st'y brick flats, 22′ x 60′, 436 South Jefferson St.; cost, $5,400.

S. Kirdera, three-st'y basement brick dwell., 22′ x 78′, 572 Centre Ave.; cost, $6,000.

C. B. Forrest, two-st'y basement brick stable, 36′ x 96′; cost, $5,000.

Wm. Shlotterback, two-st'y brick dwell. and store, 23′ x 62′, 455 Thirteenth St.; cost, $4,000.

Henry Tift, 6 four-st'y basement and attic brick stores and dwells., 74′ x 117, 407–417 North Clark St.; cost, $35,000.

H. W. Martin, 2 two-st'y basement brick dwells., 40′ x 40′, 137–139 Seventeenth St.; cost, $4,000.

M. J. Relph, two-st'y brick dwell., 22′ x 48′, 33 Congress St.; cost, $2,500.

H. H. Aldrich two-st'y basement and attic brick dwell., 38′ x 60′, 194–196 Ashland Ave.; cost, $12,000.

M. Doorak, three-st'y basement brick dwell., 22′ x 68′, 136 Taylor St.; cost, $6,000.

Frank Conrad, two-st'y basement and attic brick dwell., 20′ x 61′, 539 West Eighteenth St.; cost, $5,200.

C. J. Singer, two-st'y brick barn, 64′ x 73′, 116–124 Lincoln Ave.; cost, $6,000.

Elizabeth Planer, two-st'y basement and attic brick dwell., 28′ x 60′, 596 Lasalle Ave.; cost, $9,000.

M. C. Langlois, 2 two-st'y brick flats, 48′ x 56′, Flourney St.; cost, $7,000.

P. H. Rice, three-st'y basement brick flats, 44′ x 65′, 46–48 Carpenter St.; cost, $15,000.

Cincinnati.

BUILDING PERMITS. — George Schutter, three-st'y brick building, cor. Fourteenth and Race Sts.; cost, $3,000.

James Mack, two-st'y frame dwell., No. 588 Eastern Ave.; cost, $7,000.

J. H. Weston, five-st'y brick store, No. 27 West Sixth St.: cost, $14,000; A. C. Nash, architect.

J. C. Thoms, two-st'y brick theatre, Central Ave., near Fifth St.; cost, $15,000; Henry Bevis, architect.

Zion Congregation, two-st'y brick building, Breman St.; cost, $3,800.

John Kahley, 2 three-st'y brick buildings, Central Ave., near Clark St.; cost, $12,000.

Henry Hussman, two-st'y brick building, No. 742 Front St.; cost, $3,300.

Mrs. Sara Gibner, three-st'y brick building, No. 198 Plum St.; cost, $3,000.

Mrs. Jane Coates, two-st'y frame dwell., Denman St.

Blocker, Sachs & Gretels, five-st'y brick factory, cor. Seventh and Sycamore Sts.; cost, $12,000.

B. H. Hathaway, two-st'y frame dwell., Park Ave., near Warsaw Pike; cost, $2,900.

Mrs. S. Gibner, addition to three-st'y brick building, 198 Plum St.; cost, $2,500.

Aug. Groeser, two-st'y brick dwell., cor. of Moleton and Vaughn Sts.; cost, $8,000.

F. Kirsch, two-st'y brick dwell., Kimball Ave.; cost, $2,500.

M. Arnold, two-st'y brick dwell., Crown St., near May St.; cost, $7,000.

Twelve permits for repairs; cost, $7,000.

Total permits to date, 346.

Total cost to date, $1,267,000.

Cleveland.

BUSINESS in the building line never looked brighter than at present, and the average for this year will greatly exceed that of last. Innumerable small houses are being built, as well as a great many fine dwellings.

HOUSES. — Double dwell. for H. C. Wick; cost, $15,500; W. Harris, contractor; C. O. Arey, architect.

Dwell. for H. J. Haywood; cost, $5,000; I. N. Harrison, contractor; C. O. Arey, architect.

Frame dwell. on Sibley St., for Mr. G. L. Schryrer; cost, $7,000; J. W. Flora, builder; F. O. Bate, architect.

STORES. — Business block on Ontario St., for E. M. McGillin; cost, $20,000; Walter Blythe, architect.

Business Block on Seneca St.: cost, $75,000; Co-operative Building Co., contractors; Coburn & Barnum, architects.

Business block on Bank St., for Morgan, Root & Co.: cost, $85,000; Cudell & Richardson, architects.

Business block on Bank St., for Bradford & Carter; cost, $35,000; S. Linas, contractor; C. O. Arey, architect.

CHURCH. — Congregational Church on Franklin St.; cost, $40,000; Co-operative Building Co., contractors; Coburn & Barnum, architects.

WAREHOUSE. — Warehouse on Huron St., brick; cost, $23,000; for Mr. Foster ——; Scott & Simmons, contractors; C. O. Arey, architect.

Detroit.

BUILDING PERMITS. — H. L. Beaubine, frame house, 409 Fourteenth St.; cost, $4,000.

Mason & Rice, brick house, 20 Peterboro St.; cost, $12,000.

H. George & Son, frame house, 159 Willis Ave.; cost, $4,000.

J. & H. Wagner, 2 brick houses, 32 and 34 Joy St.; cost, $8,000.

W. H. Holland, 5 brick houses, Sproat St.; cost, $19,000.

Alex. Chapoton, 4 brick stores, 384 to 390 Gratiot Ave.; cost, $5,700.

Mason & Rice, brick factory, First St.; cost, $7,000.

Macon & Rice, brick dwell., 1008 Woodward Ave.; cost, $12,000.

W. H. & C. F. Gibson, 2 frame houses, 838 and 860 Cass Ave.; cost, $6,000.

Robert Robertson, brick house, 8 Howard St.; cost, $5,000.

Albert Albrecht, brick store-house, 56 Croghan St.; cost, $12,000.

Nuppenan & Clark, brick warehouse, Atwater St.; cost, $5,000.

Donaldson & Meier, brick store and dwell., 421 Clinton St.; cost, $8,600.

Joseph Schrager, brick store and dwell., 501 Gratiot St.; cost, $3,000.

N. J. Rogers, frame dwell., 363 St. Aubine Ave.; cost, $5,000.

W. G. Vinton & Co., brick house, 34 Peterboro St.; cost, $9,000.

A. Chapoton, brick house, Peterboro St.; cost, $10,000.

A. C. Varney, brick warehouse, 96-100, West Congress St.; cost, $23,000.

A. C. Varney, four-st'y brick wire-works, 214 West Congress St.; cost, $14,000.

A. C. Varney, brick house and barn, East Montcalm St.; cost, $8,000.

A. C. Varney, brick house, 17 Peterboro St.; cost, $6,000.

A. C. Varney, double brick house, Cass Ave.; cost, $10,000.

A. C. Varney, 2 brick houses, 21 and 23 Bagg St.; cost, $17,000.

A. C. Varney, frame house, Cass Ave.; cost, $5,000.

A. C. Varney, brick house, 505 Cass Ave.; cost, $7,000.

J. A. De Gaw, 2 brick stores, Michigan Ave.; cost, $6,000.

Julius Hess, brick house, 555 Second St.; cost, $6,800.

Julius Hess, brick house, 557 Second St.; cost, $12,000.

Julius Hess, add. to brewery, Grand River Ave.; cost, $6,000.

Julius Hess, add. to church, Campan Ave.; cost, $4,900.

H. W. Holcomb, frame dwell., Fourth Ave.; cost, $4,000.

G. W. Vinton & Co., brick house, 96 Joy St.; cost, $5,000.

New York.

BUILDING PERMITS. — *Beach St., Nos.* 74 *and* 76, five-st'y brick flat, tin roof; cost, $24,000; owner, Wm. Rhinelander, 79 Cedar St.; builders, Freeman Bloodgood and J. C. Doremus.

Thirty-fourth St., n s, and East River, one-st'y brick shed, gravel roof; cost, $4,000; owner, East River Ferry Co., on premises.

Sixty-second St., s s, 150′ e Second Ave., 2 five-st'y brownstone front tenements, tin roofs; cost, each $14,000; owner, Morris Steinhardt, 648 Madison Ave.; architect, A. B. Ogden.

Avenue A, s w cor. Eighty-second St., five-st'y brick flat, tin roof; cost, $26,000; owner, Susan A. Wright, 201 West One Hundred and Thirty-first St.; architects, Cleverdon & Putzel.

Forty-second St., n s, 218′ e First Ave., two-st'y brick dwell. and office, tin roof; cost, $3,000; owners, Wilson & Adams, Thirty-ninth St., n e cor. First Ave.; architects and builders, Chas. Graham & Son.

Sixtieth St., n s, 325′ e Eleventh Ave., 2 four-st'y brick tenements and stores, tin roofs; cost, each $9,000; owner, Mary J. Largan, 410 West Forty-ninth St.; architect, G. W. Prodgers; masons, J. Mallon & Sons.

Fulton St., Nos. 82, 84, 86 *and* 88, 3 five-st'y brick stores; cost, $20,000, $25,000, and $55,000; owners, trustees of C. L. Wolfe, No. 3 Mercer St.; architect, Jno. B. Snook.

Pleasant Ave., n w cor. One Hundred and Nineteenth St., five-st'y brownstone front flat, tin roof; cost, $18,000; owners, John Dawson, 202 West Twenty-sixth St., and Wm. Archer, 246 East Twenty-first St.; architects, Thom & Wilson.

One Hundred and Nineteenth St., n s, 75′ w Pleasant Ave., five-st'y brick flat, tin roof; cost, $25,000; owners and architects, same as last.

Roosevelt St., No. 13, five-st'y brick tenement and store, tin roof; cost, $18,000; owner, Col. Conkling, 27 East Tenth St.; architect, Bernard McGurk; builders, John Fitzpatrick and Wm. Cooper.

Sixth Ave., No. 807, four-st'y brick factory, tin roof; cost, $11,000; owner, Angelo Ghiglione, 195 Lewis St.; architect, Wm. J. Fryer.

Sixth Ave., s w cor. One Hundred and Twenty-second St., 5 four-st'y brownstone front dwells., tin roofs; cost, each, $18,000; owner, A. B. Vandusen, 26 Mt. Morris Ave.

One Hundred and Twenty-second St., s s, 80′ w Sixth Ave., three-st'y brownstone front dwell., tin roof; cost, $18,000; owner, same as last.

East Fifteenth St., Nos. 402 *and* 404, 2 five-st'y brick tenements and stores, tin roofs; cost, each, $7,500; owner, Peter Butterly, 252 First Ave.; architect, M. W. Salmon.

Ninth Ave., e s, Manhattan to One Hundred and Twenty-fifth Sts., seven-st'y brick flat, tin roof; cost, $75,000; owner, Jared W. Bell, 57 Broadway; architects, Thayer & Robinson.

St. Nicholas Ave., w s, 75′ n One Hundred and Forty-seventh St., three-st'y frame dwell. and store, gravel roof; cost, $3,000; owner, Nathan Hobart, 39 West Twenty-sixth St.; architect, T. W. Clark.

Fourth Ave., s w cor. One Hundred and Twelfth St., 4 five-st'y brick flats, tin roofs; cost, each, $20,000; owners, J. & J. O'Sullivan, 649 East Sixty-ninth St.; architect, R. Rosenstock.

Nassau St., No. 111, six-st'y brick store, tin roof; cost, $75,000; owner, Geo. G. Sickels, New Rochelle; architect, E. Sniffen; builders, Van Dolson & Arnott.

Broadway, Nos. 71 *and* 73, eight-st'y brick office-building, tin and slate roof; cost, $175,000; owner, Williamsburgh City Fire Insurance Co., 208 Broadway; architect, F. Carlos Merry; builders, Lewis H. Williams and Cheney & Hewlett.

East Fifth St., No. 742, three-st'y brick engine-house, tin roof; cost, $17,000; owner, City of New York; architects, N. Le Brun & Son.

Henry St., No. 269, three-st'y brick engine-house, tin roof; cost, $18,200; owner and architects, same as last.

Gold St., Nos. 92 *and* 94, *and Jacob St., Nos.* 11, 13, 15 *and* 17, six-st'y brick store, tin roof; cost, $75,000; owner, Ambrose K. Ely, 132 East Twenty-third St.; architect, John McIntyre; carpenter, Wm. J. O'Conner.

Greene St., Nos. 108, 110 *and* 112, 2 six-st'y brick and iron front stores, tin roofs; cost, each, $52,500; owners, Louisa B. Stillwell, extrx., 462 West Twenty-third St., and Levi Goldenburg, 29 East Sixty-seventh St.; builders, Van Dolson & Arnott.

Thirty-fifth St., n s, on bulkhead, North River, one-st'y freight-shed, tin roof; cost, $4,500; lessee, Pennsylvania Railroad Co.

Railroad Ave., e s, 300′ s One Hundred and Seventy-fifth St., 2 two-st'y frame dwells., shingle roofs; cost, each, $2,500; owner, Sarah J. Wyckoff, 1773 Washington Ave.; architect, Theodore E. Thomson.

West Thirty-sixth St., No. 140, five-st'y brownstone front flat, tin roof; cost, $22,000; owner, Samuel McMillan, 260 West Forty-sixth St.; architect, Jas. Ware.

Seventy-third St., n s, 135′ e Third Ave., 14 five-st'y brownstone front tenements, tin roofs; cost, each, $15,800; owner, Abraham H. Jonas, 13 Sheridan Sts.; architect, John C. Burne.

Eighty-second St., s s, 156′ 6″ e First Ave., five-st'y brick tenement, tin roof; cost, $17,000; owner, Annie E. Kelly, 404 East Eighty-second St.; architect, G. A. Schillinger.

One Hundred and Fifty-first St., s s, 200′ w Morris Ave., three-st'y frame dwell., tin roof; cost, $3,000; owner, Michael Sullivan, 472 East One Hundred and Fifty-first St.; architect, John Rogers.

One Hundred and Fifty-second St., n s, 255′ 8″ w Third Ave., three-st'y frame dwell., tin roof; cost, $6,000; owner, Jas. H. Riley, One Hundred and Fifty-first St. and St. Ann's Ave.; architect, M. J. Garvin; builders, P. Garvin & Son.

Second Ave., s w cor. One Hundred and Third St., 2 four-st'y brick flats and store, tin roof; cost, each, $20,000; owner, architect and builder, John Baird, 303 East One Hundred and Ninth St.

Seventieth St., n s, 100′ w Second Ave., 5 five-st'y brownstone front tenements, tin roofs; cost, each, $16,000; owner, John C. Umberfield, 216 East Sixty-first St.; architect, A. B. Ogden.

West Forty-fourth St., No. 28, one and part three st'y brick stable, tin roof; cost, $15,000; owner, A. V. H. Stuyvesant, Fifth Ave., cor. Forty-fourth St.; architect, Henry R. Marshall.

One Hundred and Forty-sixth St., s s, 209′ e Tenth Ave., 5 three-st'y frame dwells., gravel roofs; cost, each, $2,350; owner, Alex. Frazer, 22 West Thirty-sixth St.; architect, W. H. Berrian.

Greenwich St., Nos. 228 *and* 230, four-st'y brick store, tin roof; cost, $15,717; owner, Mary C. King; Great Neck; architect, Geo. M. Huss; builders, G. M. Platt and H. M. Smith & Son.

Broadway, n w cor. Thirty-fifth St., one-st'y brick theatre, peak fire-proof roof; cost, ——; owner, Chas. Johnson, 50 West Twenty-first St.; lessees, Richard Hyde, 431 Gold St., Brooklyn, and Louise C. Behrman, 17 St. Felix St., Brooklyn; architect, John Sexton.

West One Hundred and Thirtieth St., Nos. 34 *to* 56, 12 three-st'y brick dwells., tin roofs; cost, each, $11,000; owner, Wm. Astor, 23 West Twenty-sixth St.; builders, Jas. Webb & Son and John Downey.

East One Hundred and Seventeenth St., No. 322, three-st'y brick stable and workshop, tin roof; cost, $1,800; owner, Ella J. Carey, on premises; architect A. Spence.

One Hundred and Forty-second St., s s, 61′ e Ryder Ave., four-st'y frame tenement, gravel roof; cost, $6,000; owner, Mary Wilson, 183 West Eleventh St.; architect and builder, Geo. T. Campbell.

Decatur Ave., n e, s e and n w cor. Suburban Ave., 4 two-st'y frame dwells., shingle roofs; cost, each, $3,000; owner, Chas. Hedden, 15 Courtland St.; builder, Jos. Richardson.

Manhattan St., n s, 98′ e Tenth Ave., 2 four-st'y brick tenements and stores, tin roofs; cost, each, $15,600; owner, Peter McCormick, 164 East One Hundred and Twenty-eighth St.; architect, J. H. Valentine.

ALTERATIONS. — The building on the s w cor. of Canal and Eldridge Sts., is to be raised one st'y and first floor altered into retail stores, at a cost of about $15,000, for Mr. S. T. Babcock, from designs of Mr. Richard Berger; and from designs of the same architect, the building No. 112 Leonard St., is to be altered for office purposes, for Mr. George P. Slade, at a cost of about $4,000.

East Sixty-Sixth St., No. 59, three-st'y and basement brick extension; cost, $5,000; owner, Wm. Hoyt, on premises; architect, Wm. B. Tribby; builders, W. & T. Lamb, Jr.

West Third St., Nos. 3, 5, 7 *and* 9, four buildings to be connected, raise attic to full st'y, new flat roofs, and three-st'y and basement brick extension; also, new store fronts; cost, $20,000; owner, Ed. P. Dickie, 26 East Fifty-eighth St.; architect and carpenter, Chas. E. Haddon; masons, Kelly & Murdock.

Elm St., Nos. 66, 68, 70 *and* 72, three-st'y brick extension, portions of walls taken down and rebuilt, and internal alterations; cost, $10,000; owner, City of New York; architect, D. J. Stagg.

Eighth Ave., No. 466, two-st'y brick extension and internal alterations; also, front altered; owner, Lucy A. Ledwith, 315 West Thirty-third St.; architect, Jos. M. Duun; builders, John W. Ross and John F. Moore.

West Thirty-sixth St., No. 49, raise one-st'y; cost, $3,500; owner, Dr. Robert Watts, on premises; architect, H. M. Congdon.

West Fifty-seventh St., No. 413, four-st'y brick extension; cost, $6,500; owner and builder, David Christie, on premises.

East Eighty-fourth St., No. 411, three-st'y and basement extension; cost, $3,000; owner, H. Zubiller, 190 Stanton St.; architect, Wm. Graul.

Philadelphia.

CHURCHES. — The following are churches in some stage of preparation or erection, from designs of Isaac Pursell, 1420 Chestnut St.:—

Heidelberg Reformed Church; two-st'y stone building, now being plastered; cost, when finished, $45,000.

Gaston Presbyterian Church, two-st'y stone building; cost, when completed, $30,000; first story just finished.

A stone church and chapel to cost about $25,000, is now being erected for the Fiftieth Baptist Church.

Plans are in preparation for a two-st'y stone edifice for the First German Reformed Church; cost, $40,000.

Cohocksink M. E. Church will be erected this spring; stone, two-st'y, and cost, $30,000.

Plans of church and parish building in preparation for Episcopal Church of the Crucifixion.

Reformed Presbyterian Church, Nineteenth and Federal Sts., are having sketches made for a chapel to cost $10,000.

CONTRACT.—The contract for furnishing marble mantels for the Philadelphia Post-Office building has been awarded to Davidson & Son, of Chicago, Ill.

STRIKE. — The house painters have terminated their strike by compromising the matter, and agreeing to accept $2.75 per day until November 1st., when they will receive per hour, at above rate.

BUILDING PERMITS.— *Sixth St.*, e s, bet. Master and Thompson Sts., 6 three-st'y dwells., 14′ x 57′; Geo. Snyder, contractor.

North Sixth St., No. 3038, three-st'y dwell., 18′ x 56′; Wm. Schoenleber, contractor.

Bucknell St., e and w sides, bet. Montgomery Ave. and Berks St., 66 two-st'y and 4 three-st'y dwells., with stores, 14′ x 35′ and 16′ x 35′; H. R. Shoch, owner.

Cherry St., n s, e of Tenth St., three-st'y dwell., 16′ x 25′; P. J. Essex, contractor.

Barr St., n s, bet. Germantown Ave. and Nice St., 6 two-st'y dwells., 14′ x 28′; McLaughlin & McNamara, contractors.

Ellsworth St., n s, bet. Twenty-fourth and Twenty-fifth Sts., one-st'y storehouse, 37′ x 70′; W. Wharton, Jr. & Co., owners.

Haverford St., n s, w of Fifty-fourth St., 2 three-st'y dwells., 18′ x 50′; Daniel Deal, owner.

Martel St., cor. Terrace St., 5 two-st'y and 1 three-st'y dwells., 15′ x 28′; Thos. Cavanah, owner.

Twentieth St., e s, bet. Diamond St. and Susquehanna Ave., 17 three-st'y dwells., 17′ x 55′; E. H. Flood, owner.

Uber St., w s, bet. Diamond St. and Susquehanna Ave., 17 three-st'y dwells., 17′ x 56′; E. H. Flood, owner.

Susquehanna Ave., bet. Uber and Twentieth Sts., 8 three-st'y dwells., 19′ x 56′; E. H. Flood, owner.

Diamond St., n s, bet. Uber and Twentieth Sts. 8 three-st'y dwells., 19′ x 68′; E. H. Flood, owner.

Wellington St., e s, s of Kensington Ave., two-st'y dwell., 17′ x 30′; Alex. Pollock, owner.

North Nineteenth St., No. 1738, two stores and dwells., 12′ x 30′; C. A. Snyder, owner.

High St., s e s, e of Martin St., three-st'y dwell., 18′ x 50′; J. G. Shuler, contractor.

East Dauphin St., No. 434, three-st'y dwell., 16′ x 43′; Geo. Kessler, contractor.

Church St., No. 2729, three-st'y dwell., 18′ x 28′; Geo. Kessler, contractor.

North Fourth St., No. 846, three-st'y factory, 45′ x 60′; E. Schmidt, contractor.

Twenty-first St., s w cor. Sansom St., four-st'y dwell., 30′ x 50′; Stacy, Reeves & Co. contractors.

Germantown Ave., e s, s of Lehigh Ave., two-st'y store and dwell., 18′ x 42′; Jos. Parker.